The IRON AGE
October 23, 1958 A Chilton Publication The National Metalworking Weekly

What Russians Think of American Steel Practice P. 21

Copper Market: Will the Upturn Last? – P. 26

New Power Source Broadens CO_2 Welding – P. 61

Digest of the Week – P. 2-3

Cold Extrusion from

ARISTOLOY 5120

Cut Machining and Material Cost

To Molloy Manufacturing Co., cold forming of automotive parts like this steering worm called for steel with unusual cold working qualities. Uniformity and absence of surface defects were, of course, necessary . . . but closely controlled conditioning and annealing were absolutely vital. Copperweld, one of the electric furnace steel producers working on this problem, developed special processing methods that produced a steel which met Molloy's cold extruding and upsetting requirements. The production proof . . . parts like these, cold extruded and upset from a $^{29}/_{32}$″ round to a finished maximum diameter of 1.440″, with substantial savings in material and machining time.

Investigate the wide range of Aristoloy A.I.S.I. analyses for extrusion application. Then call or write for assistance from a Copperweld Field Metallurgist in selecting the best material for your job.

ARISTOLOY STEELS

COPPERWELD STEEL COMPANY • Aristoloy Steel Division

4001 Mahoning Avenue, Warren, Ohio • *EXPORT: Copperweld Steel International Co., 225 Broadway, New York 7, N. Y.*

XXX

This is the thirtieth of a series of advertisements dealing with basic facts about alloy steels. Though much of the information is elementary, we believe it will be of interest to many in this field, including men of broad experience who may find it useful to review fundamentals from time to time.

Evaluating the Machinability of Alloy and Carbon Steels

To produce a useful part, most steel has to be shaped by one or more of the metal forming methods. One of these is metal cutting or machining, which changes the shape, size, or finish of a workpiece.

Alloy or carbon steels are often received from the mill in the raw form of bars, forgings, or castings. The steel is placed in a suitable machine, such as a lathe, multiple-spindle automatic bar machine, drill press, milling machine, or one of a number of other types. Metal is then removed from the steel stock until it has acquired the desired shape. This is accomplished by causing motion to take place in the sharp-edged cutting tool, or the piece of steel, while they are held in contact with each other. Cutting tools, such as drills, tool bits, milling cutters, and the like, are made from highly-alloyed steel (tool steel), cast alloys, sintered carbide, or even ceramic material.

During machining, the metal is removed in the form of chips which may be of any length, from the short, well-broken type, to the long, stringy and continuous variety—depending upon the nature of the steel, the shape or geometry of the cutting tool, the speed and feed at which the cutting is done, and the coolant or cutting fluid applied.

"Machinability" of steel refers primarily to the ease with which it can be reduced to its final shape. It is measured by the speed and feed at which it can be cut, the quality of the surface finish produced, the length of time the tools will last, and the kind of chip formed in cutting. In a "free-machining" grade of steel, for example, high speeds and feeds can be used, tools will stand up well, surface finish will be good, and chips well broken.

Machinability is evaluated in the shop by the number of pieces having a satisfactory finish, within the required dimensional tolerances, that can be produced in a shift, or a day, with adequate tool life.

It can be appreciated that the study of the cutting of metals involves a large number of variables. These may be grouped in the following way:

1. Steel Analysis (Process, composition, microstructure, and mechanical properties)
2. Machine Tool (Condition, tool accessories, range of cutting speeds and feeds with ample power, etc.)
3. Type of Machining Process (Turning, milling, forming, broaching, etc.)
4. Cutting Condition (Speeds, feeds, and depth of cut)
5. Cutting Tool (Composition, treatment, hardness, size, shape, grinding and surface finish)
6. Cutting Fluid (Characteristics, application, and volume)

From this number of complex factors, laboratory tests and investigations have developed experimental data by using single variables, such as steel analysis, tool analysis, tool shapes, and cutting fluids. This information has proved to be a useful guide when combined with industrial experience; for no test method by itself has yet been developed that will include all the characteristics of a specific single or multiple-machining operation.

Bethlehem metallurgical engineers have had long and varied expetience and knowledge on the machinability of alloy and carbon steels. They will gladly give you any help you may require in connection with machining problems.

In addition to manufacturing all AISI standard alloy steels, Bethlehem produces other than standard analysis steels, and the full range of carbon grades. Call your nearest Bethlehem sales office for information.

If you would like reprints of this series of advertisements, please write to us, addressing your request to Publications Department, Bethlehem Steel Company, Bethlehem, Pa. The subjects in this series are now available in a handy 44-page booklet, and we shall be glad to send you a free copy.

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THE IRON AGE
Chestnut and 56th Sts.
Philadelphia 39, Pa., SH 8-2000

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Indexed in Applied Science & Technology Index and Engineering Index.

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THE IRON AGE, published every Thursday by CHILTON COMPANY, Chestnut & 56th Sts., Philadelphia 39, Pa. Second class postage paid at Philadelphia, Pa. Price to the metalworking industries only or to people actively engaged therein, $5 for 1 year, $8 for 2 years in the United States, its territories and Canada. All others $15 for 1 year; other Western Hemisphere countries, $25; other Foreign Countries, $35 per year. Single Copies 50¢. Annual Review Issue $1.00 (Cable: "Ironage," Philadelphia.

The IRON AGE

October 23, 1958—Vol. 182, No. 17

Digest of the Week in

★Starred items are digested at right.

EDITORIAL

Some Do's and Don'ts in Business and Politics 7

NEWS OF INDUSTRY

★**Special Report:** What Russians Think of American Steelmaking 21
★Steel Supply Starts to Tighten 24
★Why Copper Men Are on Edge 26
★Will Public Buy the New Cars? 27
★Instrument Sales Head for Record 28
★New Titanium Alloys 29
★How Lukens Widens Its Markets 30
The IRON AGE Salutes 35
Men in Metalworking 51

FEATURE ARTICLES

★New Power Broadens CO_2 Welding 61
★Timken Goes to Vacuum Melting 64
★Oxy-Gas Cutting Torch Works Fast 66
★Tool Builder Takes on Plastics 68
★How to Conquer Gaging Errors 70
High-Speed Piercing for Short Runs 73
Vacuum Die Casting Gets Boost 76

NEWS ANALYSIS

Newsfront 19
Report to Management 37
★Automotive 38
★Washington 43
★West Coast 45
★Machine Tool 47

MARKETS & PRICES

★**The IRON AGE Summary** 101
Purchasing 102
Steel Product Markets 104
Index to Prices 105
Iron and Steel Scrap Markets 106
Nonferrous Markets 108
Clearing House 118

REGULAR DEPARTMENTS

Letters 9
Fatigue Cracks 11
Coming Exhibits, Meetings 13
Technical Briefs 85
New Equipment 91

INDEX TO ADVERTISERS 122

NEWS ARTICLES

STEEL DELIVERIES

Signs of Tightening—So far, the fourth quarter upturn is proceeding at an orderly pace. But a sudden wave of scare buying could touch off a critical shortage. P. 24

COPPER

Bears Watching—Trade is optimistic as supplies are down and prices head up. But there are some question marks that are keeping the industry on the alert. P. 26

INFLATION FACTORS

Autos, Steel, and Labor — New auto labor contracts are called inflationary. Will steel labor negotiations have the same result? P. 27

1959 AUTO SALES

Early Rush Expected—General Motors is stocking up for an expected fourth quarter flood of car and truck orders. Consumer interest high at Motorama exhibit. P. 38

DEFENSE SPENDING

On the Way Up—Word that a $1 billion rise in defense spending is coming has leaked out of the Pentagon. It is blamed on inflation and more missile requirements. P. 42

SPACE PLANNING

No Room for Stunts—A soundly conceived, long range program of

Metalworking

VISITING RUSSIANS: Delegation of Soviet steel men, headed by A. F. Borissov (top, center) express views on American steelmaking practice. They are impressed by U. S. mining, sintering, rolling techniques and tube mill operations. P. 21

space research will do more to build our world prestige than a hastily concocted series of stunts, says a Cal Tech scientist. P. 45

BUILDING BLOCK TOOLS

Popularity Grows—Eleven more major tool users have come out in favor of the building block concept. Reduction in machine obsolescence is a factor. P. 47

FEATURE ARTICLES

CO_2 WELDING

New Power Source—Automatic all-position CO_2 welding is here. The key is a dynamic reactor that limits the rate of weld current. It permits use of larger wire sizes and, for the first time, use of CO_2 for vertical ond overhead welding. P. 61

VACUUM MELTING

For Quality Alloy—To meet the demand for cleaner, sounder steel a firm has chosen a consumable electrode vacuum arc furnace. The new $500,000 unit will produce 200 tons of high quality alloy steel a month for bearings. P. 64

OXY-GASOLINE CUTTING

Works Fast, Lowers Cost — A new flame torch cuts through ½-in. steel at 30 ipm on just 12 cc of gasoline and 48 liters of oxygen. Big savings are on fuel. Further savings stem from reduced labor storage and handling costs. The oxy-gasoline flame leaves little or no slag. P. 66

REINFORCED PLASTICS

Tool Builder Enters Field—A firm's new plastics department is turning out plastic parts for all machines in its own line, plus many parts for other firms. Advantages include production savings up to 50 pct, light weight, and greater pound-for-pound strength. P. 68

PRECISION GAGING

How to Conquer Errors—Some shops now have to measure down to millionths. Such tolerances depend on accurate gaging. Wear, dirt and looseness head a list of nine major cause of errors in gaging. P. 70

MARKETS & PRICES

MARKET DEVELOPMENT

Help the User—Market development should bring industrial progress as well as sales, marketers at Lukens Steel say. Research on welding plate led them into marketing welding electrodes. P. 30

INSTRUMENT SALES

Rebounding Sharply — Instrument makers have shaken off the first half slump in orders. Current improvement could mean a new, all-time record for sales this year. P. 28

TITANIUM

Fights Back—Titanium has been losing some aircraft and missile applications to high-strength steels. Now a titanium producer comes up with an alloy claimed to be stronger than most steels. P. 29

CRITICAL POINT

Steel Market Could Tighten—Sheet and strip products could grow tight as a drum during the next month. It all depends on what the auto companies do. P. 101

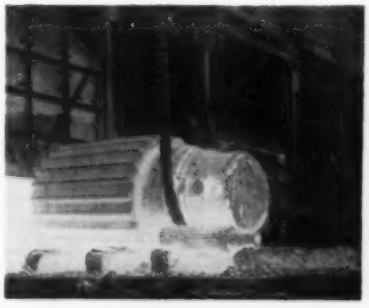
GEAR DELIVERIES

Stretchout Possible—Gear buyers are flooding makers with rush-rush orders. Manufacturers caution that fourth quarter orders should be placed as soon as possible. P. 102

NEXT WEEK

VACUUM POURING

For Flake-Free Forgings — Vacuum pouring 120-in. diam, 250 ton steel ingots to get quality forgings is fast becoming routine for one steelmaker. Next week's feature tells how practical vacuum pouring method rids giant forgings of embrittlement problems.



54" HOT STRIP MILL

by Pittsburgh

featuring **DIRECT DRIVE** *to* **ALL SIX STANDS**

For the first time anywhere a 54" hot strip mill with direct drive to all mill stands has been built at the Portsmouth plant of Detroit Steel Corporation. This design eliminates the conventional large gear drive which is expensive to install, costly to maintain, less efficient in operation, and requires more space. Pittsburgh Engineering and Machine Division designed, fabricated and erected this entire mill with its many outstanding features.

We invite your inquiries for all types of rolling mills and auxiliary equipment.

"Electric and open hearth steel castings from 1 lb. to 100 tons"

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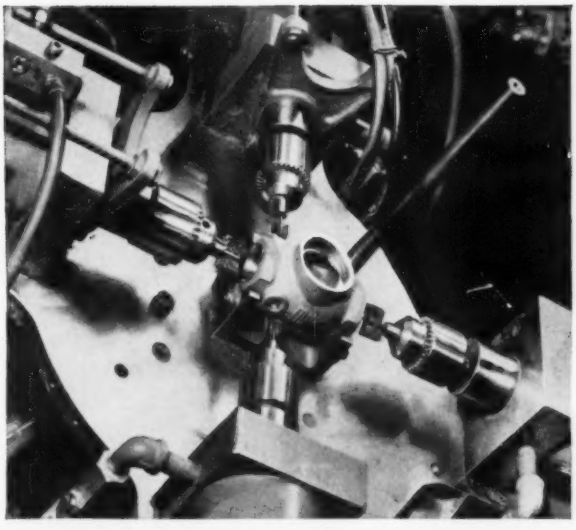
Here's a sure way to speed production ... cut costs ... improve product quality —*Osborn Power Brushing.* Let us show you how to clean, finish and deburr metallic or non-metallic parts, large or small with efficient, low-cost power brushing today.

The uses for power brushes in industry for metal finishing are virtually unlimited. An **O**sborn **B**rushing **A**nalyst can show you how to benefit. Write *The Osborn Manufacturing Company, Dept. F-74, Cleveland 14, Ohio.*



SPEED BURR REMOVAL—The 4 threaded ports in this valve body are being deburred and cleaned in one fast operation by Osborn Situft® Brushes and this simple power brushing setup. Doing the job by hand was slow, costly. Now Osborn Power Brushing does it 66% faster ... saves 8 manhours per thousand parts.

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SPEED FINISHING—These aluminum ammunition components are finished at high production rates ... to meet rigid quality control standards. Here, three Osborn Master® Wheels plus simple rotating fixture setup finish pieces at a rate of 1400 per hour. Feather burrs are thoroughly removed ... surface junctures are blended uniformly to cut the cost on this job 74%.

SPEED CLEANING—For cleaning set-screw threads, this manufacturer relies on Osborn Power Brushing. Operator feeds screws into a simple pipe-fixture ... Osborn Monitor® Brushes spin and clean them fast, thoroughly. A stationary Osborn Situft® Brush controls rotation and traverse of the screws across brush faces. Cleaning time is cut from 18 to 2 seconds per piece.

Write TODAY for Osborn Catalog 210-C.

Osborn Brushes

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Need WIDE Stainless Sheets?

Get Armco Stainless Steel sheets or light plates up to 84 inches wide

Heavy gage sheets in high-quality Armco Stainless Steels are available in 7-foot widths—lighter gages up to 73 inches. And when it comes to light plates (also up to 84 inches wide), you'll find the excellent surface finish produced on Armco jobbing mills is unsurpassed. Get specific information about Armco Stainless for *your* applications. Use the handy coupon.

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We're interested in___-inch wide, Type___Armco Stainless Sheets in the following gage___. We make_____

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Some Do's and Dont's In Business and Politics

This is no short-cut method on how you as a businessman can make the grade in politics. It may be that you are going to be in "it" actively. Maybe you will report to your stockholders and employees on trends in politics. Whatever you do you must learn the common language.

Suppose you are invited to make a television or radio talk—along with a union official. Unless you know how to think and talk fast on your feet, don't accept. If you are sincere about getting into the fight, start learning how to argue and say things without a ghost writer, a prompter, or the printed page. If you can't learn, then stay out of gatherings where the public can get at you with questions, arguments, and insults.

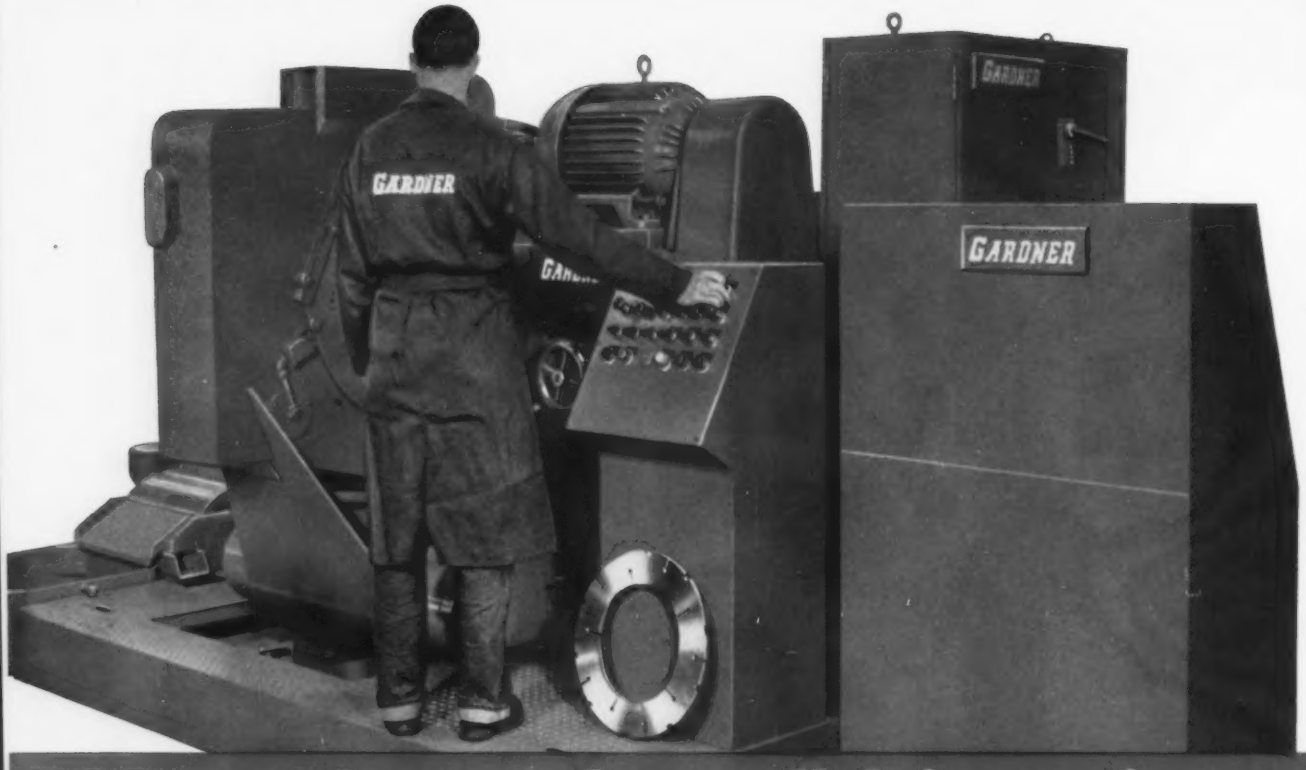
Every day of your life is politics in that much of life has to be a compromise. The common language on that score is to make yourself understood. The best way to do that is to be natural. If you are naturally very direct, think twice before you adopt a different attitude in public. Insincerity is spotted quick as a wink by most ordinary people. And it is the ordinary person you are going to try to impress if you get into politics or help in politics.

Study your successful businessmen turned successful politicians. Many became world beaters in their new profession. Whether they be Republicans or Democrats, they learned how to be a good politician AFTER they had been businessmen. To roll with the punches is a high sign with them. To speak up in earnestness for what they believe to be the truth at the time is one of their attributes. To be fearless is another. But to know that most people can't be won over by long harangues, complex arguments, and learned dissertations was the hardest thing for these men to learn—but they did it.

Any man who talks as if he honestly and deeply believes what he is saying will get a hearing. Of course, there are a lot of rules that the old pros will teach you. But without a little self honesty, a lot of humility, and a simple conviction as you deliver it off the cuff, you will be lost. Better then that you stay out of all politics and give your vote and your money.

But the sad truth is that businessmen HAVE to get into politics—and fast. If they don't, they will have lost out—for their creeds, their business, and for themselves—by default.

Editor-in-Chief



precision grinds parallel faces of large aircraft brake discs

TWO parallel surfaces ground in **ONE** operation

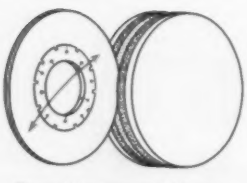
. . . production paced by automatic cycling

. . . tolerances checked by automatic gaging

Close limits of flatness, parallelism and uniformity are held by 2H30 Double Spindle Precision Disc Grinder in large area grinding operation. (left) Swinging arm fixture handles discs of different diameters.

production data

Machine	Gardner 2H30 Disc Grinder
Operation:	Rough and finish parallel sides of aircraft brake discs
Size of Workpieces	12″ O.D. to 21″ O.D.
Cycle	3 to 6½ min. each depending on size
Stock Removal	.062″ max. overall
Flatness	.002″ to .003″
Parallelism	.001″
Uniformity	.004″
Finish	80 RMS



Loading position—swinging arm

Grinding position—fixture rotates

GARDNER

precision disc grinders

BELOIT, WISCONSIN

Executive Ability

Sir—Please send us 25 copies of the article "How to Develop Executive Ability" which appeared in the September 25 issue of The IRON AGE.

The article spells out, in a forceful way, some of the things we have been trying to teach our junior executives.—W. R. Davis, Asst. Gen. Mgr., The Kaydon Eng. Corp., Muskegon, Mich.

Sir—I have read the article on developing executive ability by William B. Given, Jr., chairman of the board of the American Brake Shoe Co. I consider it to be extremely well written. It deals with the subject in a clear and concise manner touching all the main points. For this reason I would appreciate receiving a reprint.—R. H. Stroud, Customs Appraiser, c/o Collector of Customs & Excise, Kitchener, Ontario, Canada.

Sir—The article . . . by Mr. Given is excellent. We would appreciate receiving 50 or more reprints to pass on to our executive personnel.—L. F. Lesnak, Personnel Director, Lamson & Sessions Co., Cleveland.

"Sir, I have been appointed spokesman for the grievance committee."

Sir—Please forward to my attention 25 reprints of "How to Develop Executive Ability."—R. H. Loutzenhiser, Vice Pres. of Operations, Jones & Laughlin Steel Corp., Stainless Steel Div., Detroit.

Sir—Please send me a copy.—C. J. Pearce, Materials Eng. Depts., Mag. Application Section, Westinghouse Electric Corp., Pittsburgh.

Sir—May we have five copies or reprints. — R. Schempp, Works Mgr., Crucible Steel Co. of America, Pittsburgh.

Sir—Your article . . . imparts such good logic and advice for this growing age of industry I would like to receive reprints at your earliest convenience.—Charles Nolan, Production Supervisor, Awards Div., L. G. Balfour Co.

▪ Almost 1800 reprints of this article were requested in the three weeks following its publication. All but a few have been mailed out. The remainder will be sent out shortly. —Ed.

Committee Work

Sir—We request permission to reprint the article, "How to Make Committee Work Pay Off," which appeared in your July 10 issue.

It is intended to reprint this article in a future issue of the Headquarters Sixth Army Management Improvement Materials Packet, which is distributed to installations throughout the Sixth US Army area.—N. A. Bader, Chief, Management Div., Headquarters Sixth US Army, Presidio of San Francisco, Calif.

▪ We are happy to give you our permission to reprint the article.—Ed.

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STAINLESS STEEL
THIN STRIP

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All regular commercial tempers.

Commercial bright anneal finish.

Unique annealing facilities provide uniform temper and uncontaminated surface.

Coils or cut lengths, both with #3 edge.

302, 305, 321, 347, 430, 17-7PH, PH15-7MO plus various high temperature alloys and rare metals.

Available for prompt shipment in production quantities.

FOR EXACTING STANDARDS ONLY

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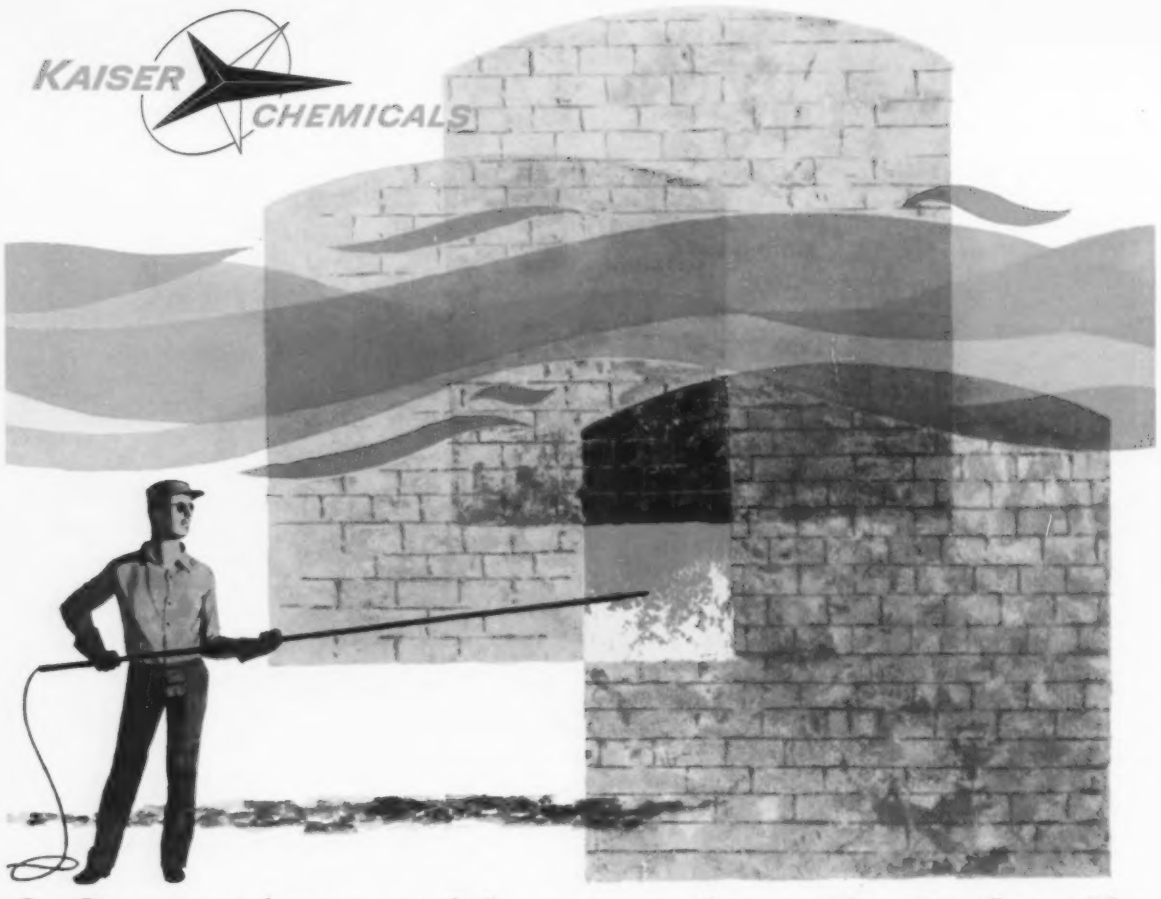

3 Campaigns with open hearth endwalls of Kaiser Periclase Chrome Brick!

• "Took off #6 Open Hearth and found Kaiser Periclase Chrome Brick looked so good in the endwalls that they were left in for the third campaign."

• "After two campaigns of 90 and 106 heats, Brand 'A' were removed from the down-river end and Kaiser Periclase Chrome Brick are going to complete a third campaign in the up-river end."

• "Furnace this month finished third campaign of 176 heats, and at that time Kaiser Periclase Chrome endwall had gone through 562 heats. At this writing, this endwall has approximately 600 heats . . ."

Every month reports like these bring more and more dramatic evidence of improved endwall service. And more often than not, these reports show how *new shop records* have been established with Kaiser Periclase Chrome Brick. Here are the properties that make possible such performance:

1. Volume Stability. Chromite content is the minimum amount necessary to provide resistance to thermal shock. Lowering of chromite also reduces swelling in presence of iron oxide, thus minimizes buckling and peeling.

2. Uniform High Strength because ceramic bond is formed *before* the chemical bond burns out.

3. Outstanding Resistance to Distortion and Shrinkage because there is no liquid phase in the conversion from chemical to ceramic bond.

4. Excellent Resistance to Chemical Attack by furnace fumes, iron oxides and slags is assured by high magnesium content, maximum brick density (low porosity) and chemically stable composition.

Make a comparison test and see how much more life you get with Kaiser Periclase Chrome Brick. Your Kaiser Chemicals Sales Engineer will be glad to help.

Call or write Kaiser Chemicals Division, Dept. S8141, Kaiser Aluminum & Chemical Sales, Inc., at any of the regional offices listed below:

PITTSBURGH 22, PA. . . . . 3 Gateway Center
HAMMOND, IND. . . . . 518 Calumet Building
OAKLAND 12, CALIF. . . . . 1924 Broadway

Refractory Brick & Ramming Materials • K/R Gunning Systems
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Nothing to It

"Wherever we go," said Alexander Filippovich Borissov, "there is an IRON AGE editor asking questions about what we think of the American steel industry." Mr. Borissov (see story, p. 21) is head of the 19-man delegation of Russian steel and iron ore experts, who have been touring U. S. mills and mines for the past month.

One Shot?—Now the easiest way for us to have brought you the Russians' impressions of U. S. mills and mines would have been to wait until the end of the tour and query them in Washington or New York.

There were two objections to that: (1) We thought you'd prefer on-the-spot reactions; and (2) you never get to ask all the questions you want in one press conference.

Linger Over Lunch—Our Washington staff almost made liars out of us on the latter point. For, after sitting in with 30 other reporters at the official press conference, they calmly took the three top Soviet experts out to lunch where they had a fine chance to chat—and bring you exclusive information on their buying ideas.

The rest of the interviews were a lot harder to get. Remember that the Russians were on the move, with little time for more than brief press conferences at any one place.

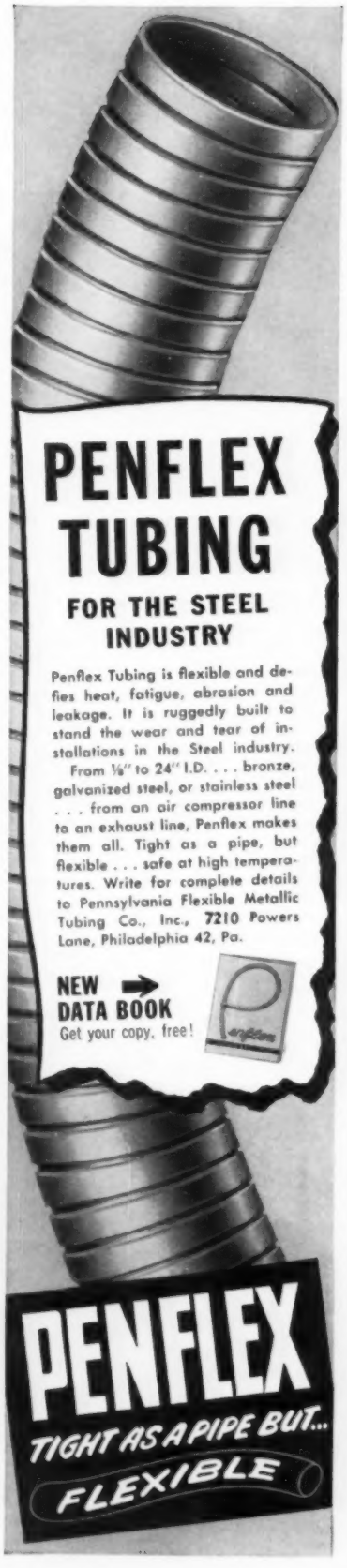
For the first few days the Russians weren't talking. They objected to a trip to MIT in Cambridge ("We came to see steel mills"), and they weren't about to comment on anything.

And Then, Ohio—Next we had a go in Youngstown, where the Soviet steel men toured the United Engineering shops. Better luck there. Then a press conference in Pittsburgh and a Duquesne Club dinner where our Pittsburgh man had a chance for some small talk and a few questions. Then Washington and New York.

Check it Again—All we had to do then was talk to people in the various steel plants on the Russian's tour route to find how they'd spent their time and what caught their attention—and we had a package of 47 photos and enough copy to choke a Siberian horse.

The result is the brief three-page article which made this week's cover story.

QUESTIONS, QUESTIONS: Wherever Red steel delegates went they found IRON AGE reporters asking questions. Interviewing Reds at National Press Club in Washington, D. C., are (third and fourth in the back row) Neil Regeimbal and George Baker, IRON AGE Washington representatives.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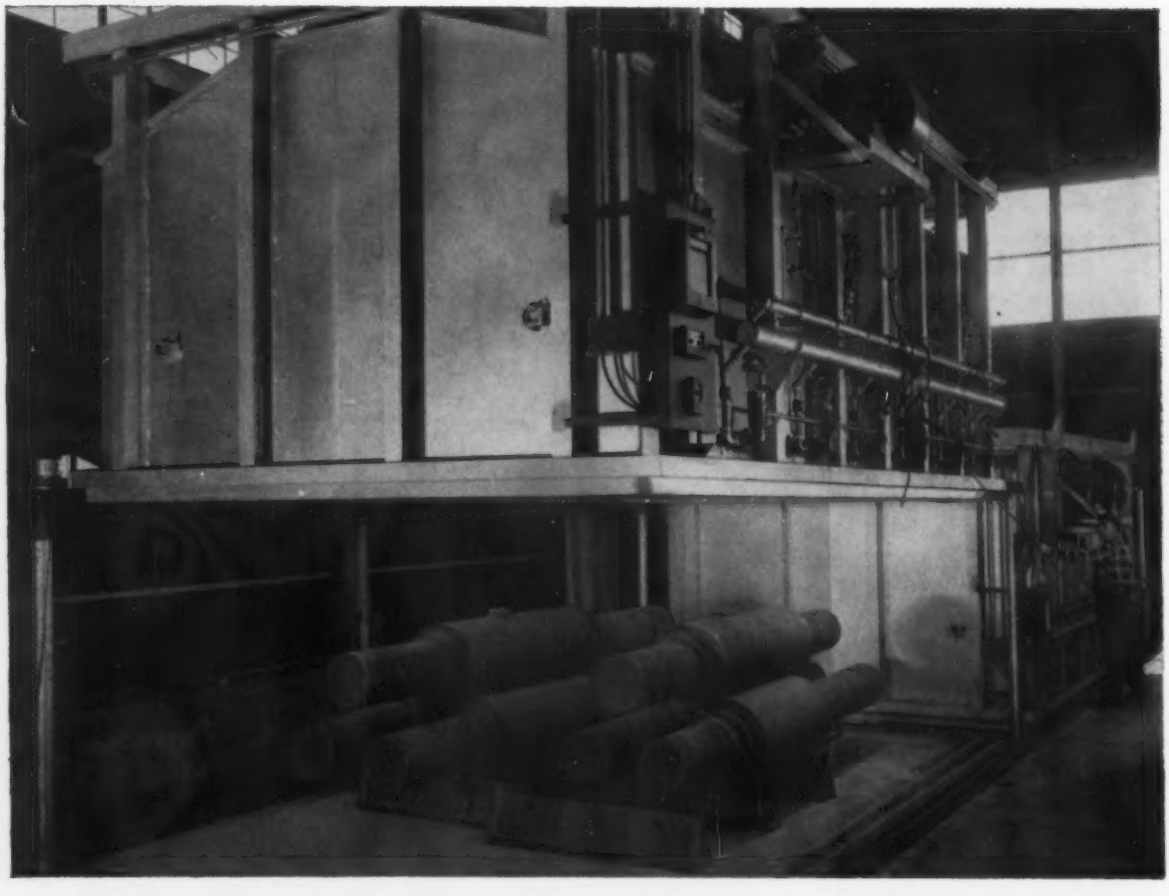
PROGRESS IN ROLL MAKING

annealing iron and steel rolls



NEW ANNEALING FURNACES

. . . for heat treating iron and steel rolls have been installed at National. These new program controlled annealing furnaces, in addition to the previously installed battery of six automatic zone control, car type heat treating furnaces, enable National Roll & Foundry Division to heat treat your iron and steel rolls to the exact degree required for long tonnage life in your stands.

These annealing furnaces are another example of what's new at National—new buildings, new equipment, new ideas—all part of the expansion and modernization program designed to give you better iron and steel rolls.

GENERAL STEEL CASTINGS CORPORATION

National Roll & Foundry Division

Avonmore (Westmoreland County) Pennsylvania

General Steel Castings Corporation: General Offices, Granite City, Ill. • Plants: Granite City, Ill.—Eddystone, Pa.—Avonmore, Pa.

COMING EXHIBITS

Metal Show—Oct. 27-31, Public Auditorium, Cleveland. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

Plastics Show—Nov. 17-21, International Amphitheater, Chicago. (The Society of the Plastics Industry, Inc., 250 Park Ave., New York 17.)

Power & Mechanical Engineering Show—Dec. 1-5, New York Coliseum. (International Exposition Co., 480 Lexington Ave., New York 17.)

MEETINGS

OCTOBER

American Gear Manufacturers Assn.—Semi-annual meeting, Oct. 26-29, Edgewater Beach Hotel, Chicago. Society headquarters, One Thomas Circle, Washington, D. C.

America Institute of Steel Construction, Inc.—Annual convention; Oct. 26-30, Greenbrier Hotel, White Sulphur Springs, W. Va. Society headquarters, 101 Park Ave., New York.

National Lubricating Grease Institute—Annual meeting, Oct. 27-29, Edgewater Beach Hotel, Chicago. Society headquarters, 4638 J. C. Nichols Parkway, Kansas City, Mo.

Ultrasonic Manufacturers Assn.—Annual meeting, Oct. 28, Hotel Cleveland, Cleveland. Society headquarters, 271 North Ave., New Rochelle, New York.

Metal Treating Institute — Annual meeting, Oct. 29-31, Hotel Cleveland, Cleveland. Society headquarters, 271 North Ave., New Rochelle, New York.

NOVEMBER

Grinding Wheel Institute — Semi-annual fall meeting, Nov. 5-7, Statler Hotel, Buffalo, N. Y. Society headquarters, 2130 Keith Bldg., Cleveland.

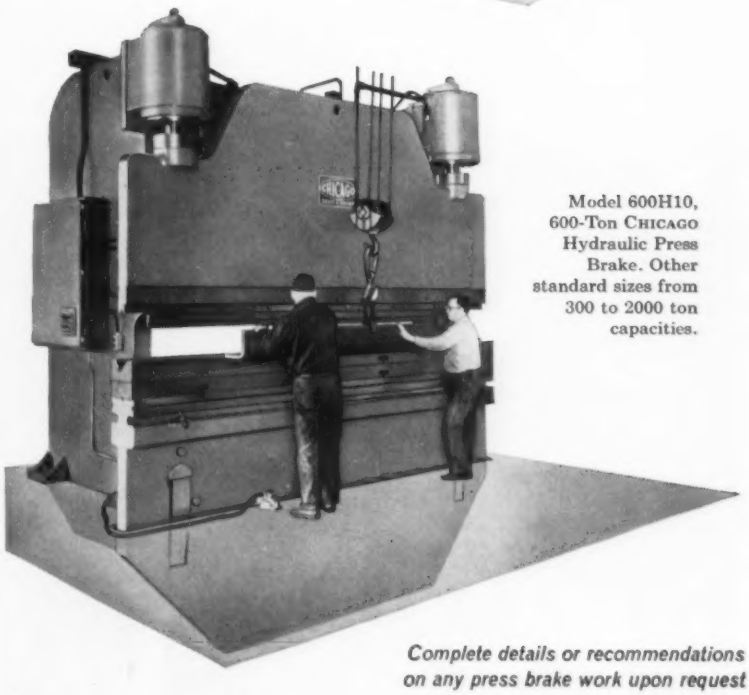
National Metal Trades Assn.—Biennial convention, Nov. 5-7, Hotel Commodore, New York. So-

(Continued on P. 16)

CHICAGO® PRESS BRAKES

unexcelled accuracy / ***for sheet metal and plate work***

Model 410D, 90-Ton CHICAGO Mechanical Press Brake. Other standard sizes from 11 to 450 ton capacities.



Model 600H10, 600-Ton CHICAGO Hydraulic Press Brake. Other standard sizes from 300 to 2000 ton capacities.

Complete details or recommendations on any press brake work upon request

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Press Brakes
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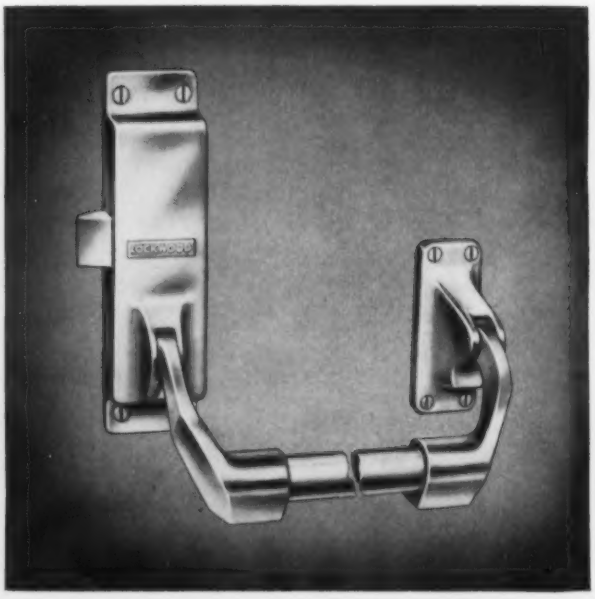
7430 S. Loomis Blvd., Chicago 36, Illinois

Fire!

. . . and USS American Music Wire

CRUCIAL. In the hands of a skilled workman the vital spring goes in place in the Lockwood "Lock 'n Roll" panic exit device. In times of emergency and panic the lives of thousands of people depend upon the unfailing action of this little spring.



EVER READY to release and open the door at the lightest touch. Held in place in the "Up" position by the spring of USS American Music Spring Wire, this panic latch will open easily, smoothly at the touch of a finger tip.

Crowds of children leaving a burning school—their safety depending upon the open door and on the smooth, perfect operation of the panic opening device. Latches of this kind are designed to meet and pass a supreme test of efficiency—a test they will probably never need to undergo. But should an emergency occur, the latch must operate completely and perfectly.

Because this "Lock 'n Roll Latch" panic exit device serves so vital a purpose, because it must give long, unfailing service, must open easily, instantly every time it is touched, the Lockwood Hardware Manufacturing Company, Fitchburg, Mass. spares no effort in design, manufacturing and selection of material to make this latch as perfect as possible.

For the latch to operate properly, the cross bar must remain in the "Up" position, ready to release the door at the lightest touch. To hold the bar in this position is the job of a very vital, specially designed spring—made of USS American Music Spring Wire.

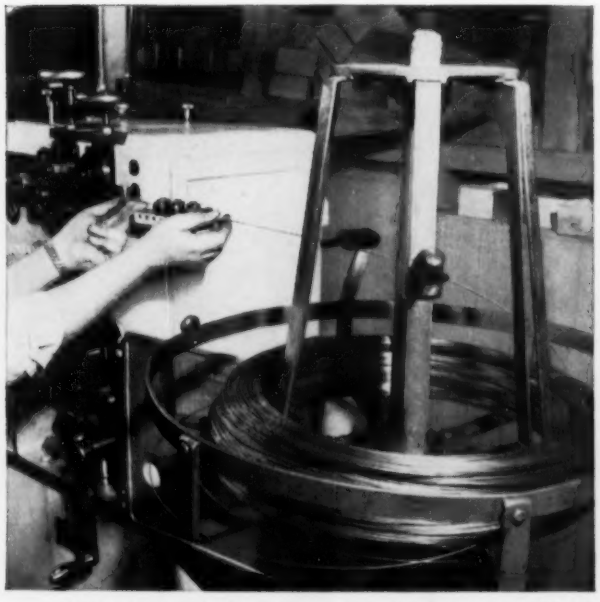
In their search for a wire to make the spring for the panic exit device, the Lockwood Hardware Manufacturing Company selected USS American Music Spring Wire for its complete dependability, its consistent uniformity and its superior quality. The experience gained in 125 years of wire drawing and manufacturing has stood American Steel & Wire in good stead in supplying the high-quality Music Spring Wire required by the Lockwood Hardware Manufacturing Company.

If you have a product involving the use of spring wire or any other type of wire, get in touch with American Steel & Wire. The same controlled quality, dependability, and uniformity are available to every fabricator who uses USS American Manufacturers Wire in the products he produces. Just write to American Steel & Wire, 614 Superior Ave., N.W., Cleveland 13, Ohio.

American Steel & Wire Division of USS **United States Steel**

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors • Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors • United States Steel Export Company, Distributors Abroad

makes sure the door opens!



8,000,000 A MONTH. Shown here USS American Music Spring Wire is being fed into a Sleeper & Hartley spring coiler. The Lockwood Company uses ten spring coilers and one torsion machine to produce the 8,000,000 springs they use a month.

INSPECTION. Important final inspection for Lockwood spring assures that this spring will have the necessary dependability and reliability to meet the rigid requirements of a panic door exit device used on schools and other buildings.

EXHIBITS, MEETINGS

(Continued from P. 13)

ciety headquarters, 337 W. Madison St., Chicago.

National Machine Tool Builders' Assn.—Annual meeting, Nov. 5-7, The Homestead, Hot Springs, Va. Society headquarters, 2071 E. 102nd St., Cleveland.

Industrial Management Society—Anuual national industrial engineering and management clinic, Nov. 5-7, Sherman Hotel, Chicago. Society headquarters, Suite 1310, 330 S. Wells St., Chicago 6.

National Tool & Die Manufacturers Assn. — Annual convention, Nov. 5-9, Sheraton Hotel, Philadelphia. Society headquarters, 907 Public Square Bldg., Cleveland.

Steel Founders' Society of America—Technical & Operating conference, Nov. 10-12, Carter Hotel, Cleveland. Society headquarters, 606 Terminal Tower, Cleveland 13.

National Electrical Manufacturers Assn. — Annual meeting, Nov. 10-13, Hotel Traymore, Atlantic City, N. J. Society headquarters, 155 E. 44th St., New York.

Electric Overhead Crane Institute—Engineering committee meeting, Nov. 13-14, Sherman Hotel, Chicago. Society headquarters, One Thomas Circle, Washington 5, D. C.

American Standards Assn.—National conference on standards, Nov. 18-20, Hotel Roosevelt, New York. Society headquarters, 70 E. 45th St., New York 17.

Automotive Tool & Die Manufacturers Assn. — Annual meeting, Nov. 26, Fort Shelby Hotel, Detroit. Society headquarters, 103 Pallister Ave., Detroit.

American Society of Mechanical Engineers—Annual meeting, Nov. 30-Dec. 5, Statler & Sheraton-McAlpin Hotels, New York. Society headquarters, 29 W. 39th St., New York.

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No over-finishing . . . no under-finishing with the Brush Surfindicator. Weighing only 15 lbs. and ready to be plugged into any 115 volt outlet, it provides on-the-job instant surface measurement. Controlled finish is now practical—inexpensive—and extremely profitable.

The Brush Surfindicator measures any surface—any shape—any size. Accurate measurements in microinches can be seen at a glance! It brings you laboratory-precision measurement unaffected by magnetic fields, vibration or line voltage variation. It requires no skill . . . can be used by anyone who can read a meter. Measurements are easily made

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DIVISION OF
3405 PERKINS AVENUE CLEVITE CORPORATION CLEVELAND 14, OHIO

A word to the refractory-wise:

The recession is fading fast... are you ready for the rebound?

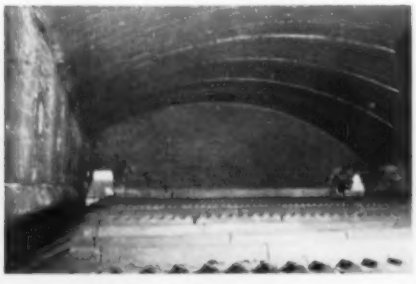
Industry is on the move again. But management has learned valuable lessons from the recession. In the future they will exercise extremely *close* control of costs. To satisfy this sharp-eyed attitude, unit costs and prices must be brought down to a rock-bottom low. So make sure *your furnaces* can help cut production costs. Make sure your furnaces are ready *now* to operate at peak efficiency during the months to come.

Consider the "vulnerable" areas in your furnace, for example — areas subjected to flame impingement or heavy loads, or exposed to abrasion or corrosion. Or other working areas where heat must pass *through* the refractory. These are the areas where you can substantially cut production costs — particularly if you use one of our special-purpose Super Refractory materials. The three examples on this page show how *large* these savings can be.

HERE'S HOW YOU CAN START CUTTING COSTS:

it will take less than an hour to read these two booklets about the applications—and properties—of Carborundum's unique, new super refractories. Send for them today, to Refractories Div. Carborundum Company, Perth Amboy, N. J., Dept. B-108 A.

LAST 5 TIMES AS LONG. In this high temperature atmosphere furnace, parts travel through on a cycle from cold to 2100°F to cold in 1 hour and 10 minutes. Metal fixtures warped, stuck to parts. Thicker fixtures absorbed furnace heat. Super Refractory fixtures outlasted the alloy 5 to 1, cut weight, ended sticking, and cost less as well.



STOP ALL MAINTENANCE FOR 2 YEARS. Notches in this walking beam furnace lasted 4 to 6 months, and furnace had to be shut down almost weekly for repair on the notches (on which bars being heated rest). When Super Refractory rests were installed, the furnace ran for 2 years without any repair at all, and ran another year with only 10% replacement. Cost? Less than half that of alloy.

HANDLES CHEMICAL ATTACK FOR 5 YEARS. This nozzle sprays 150°F acid into an absorbing chamber where gases are at 1800°F. This Super Refractory easily withstands this tough combination of both corrosion and sharp temperature gradient, and lasts over 5 years, compared to 2 months for metal.

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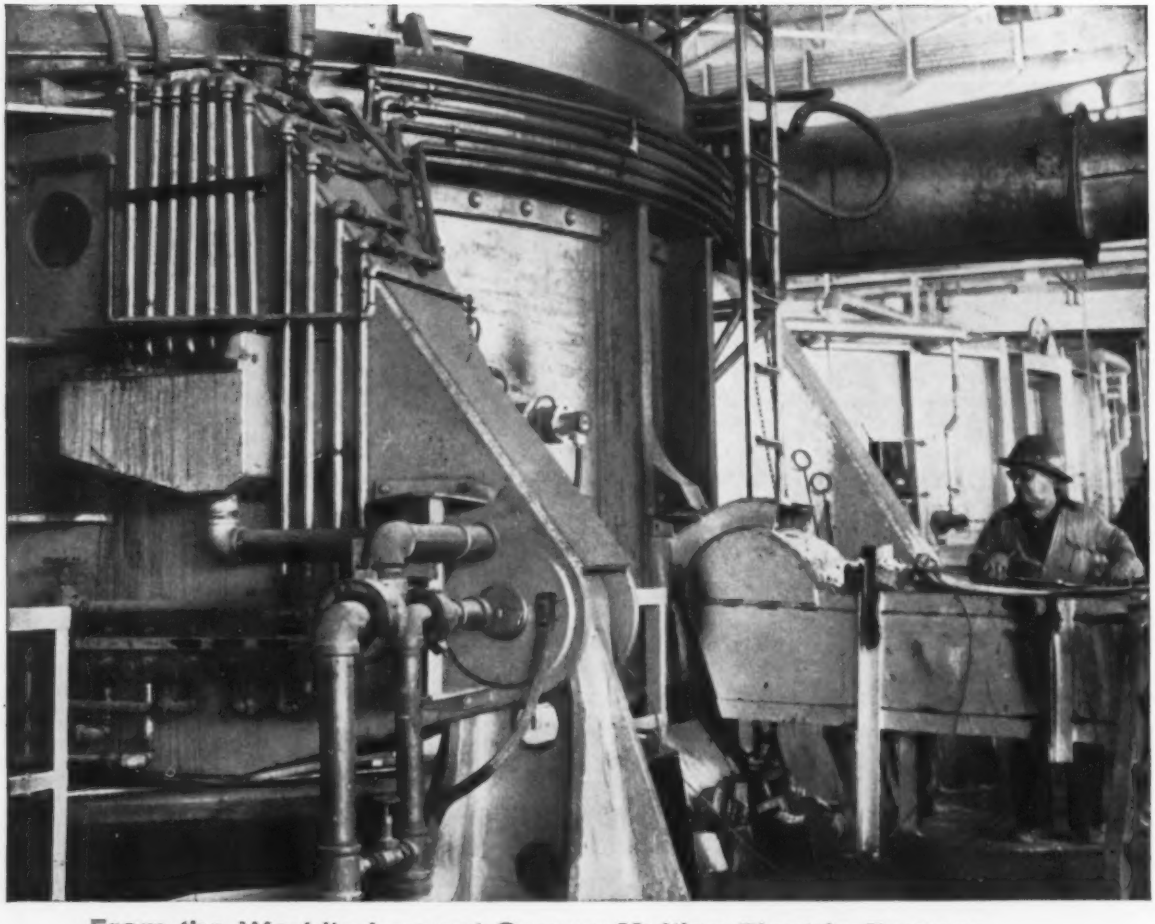

From the World's Largest Copper-Melting Electric Furnace

TOP QUALITY CASTINGS... ROCK BOTTOM COSTS

Whiting Hydro-Arc Electric Furnace at the Perth Amboy, N. J. plant of American Smelting and Refining Company pours a ton of copper every two minutes—24 hours a day, 7 days a week. Operating costs are competitive, even in this area of high-priced electric power.

Hydro-Arc offers you the *precise* temperature control that assures a top quality product—be it copper, iron, steel, or any other metal or material. You will save money, too, because continuous melting boosts production . . . top-charging reduces downtime . . . simplified design cuts maintenance costs . . . and Hydro-Arc costs less installed than other equipment of equal capacity. For prime melting or duplexing get the facts on Hydro-Arc.

SEND FOR NEW 8-PAGE BULLETIN EF-100

telling all about the electrode arm and clamp which floats on a cushion of air and which is clamped by a cushion of air. Booklet is fully illustrated. *Whiting Corporation, 15601 Lathrop Avenue, Harvey, Illinois.*

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WHITING

FOUNDRY EQUIPMENT

MANUFACTURERS OF CRANES; TRAMBEAM HANDLING SYSTEMS; TRACKMOBILE; FOUNDRY, RAILROAD AND CHEMICAL PROCESSING EQUIPMENT

Copper Plate for Carbides

Copper plating of tungsten carbide is now practical with a newly developed process. The method makes possible attaching carbide with low-temperature soft solder. It should greatly widen uses of carbide in gages and instruments and for wear surfaces. The method is being offered on a contract basis.

Study Metal Processing

Researchers are giving some thought to hooking up a direct-reduction unit at the end of a taconite processing line. It would carry processing a step further, turning out pig iron at low cost with low capital investment. Another possibility is the adding of a desulphurizing unit which would then result in steel.

Check on Radiation Theory

Flight of Pioneer rocket has given scientists a better idea as to the radiation belt around the earth. While the rocket failed to reach the moon, it seems to confirm a theory: Radiation falls in intensity as highest altitudes are reached. At 5000 miles, estimated roentgen intake of Pioneer was 4 per hour. At 10,000 miles it was 3 per hour and dropping. Atomic Energy Commission considers only 3/10 roentgen per week a safe human dosage.

Join Powder Iron, Graphite

A research laboratory is close to perfecting a production process to make graphite and powdered iron adhere. It will permit making lifetime-lubricated iron parts. Possible applications include use as bearing surfaces and in auto suspension systems to eliminate need for lubrication.

Steel Buyers Study Market

Some steel buyers for large tonnage users, concerned about the prospects of a tightening market, are already placing first quarter orders with their mills. Inventories are also being built up as a hedge against a possible steel strike next summer. One large appliance firm has placed plate orders through March with its suppliers.

Luminous Wall Furnace

Fast heating up to 2300°F with a 40-pct savings in fuel is claimed for a new heat-treating furnace. The heating system has a porous refractory through which air-gas mixture flows under controlled pressure. At the surface of the refractory, the temperature builds up to 1500°F in 2 to 2½ minutes. While there's rapid heat transfer to work being processed, thermal storage in the furnace is negligible.

Seamless Joints on Missiles

Missile parts makers are trying to minimize material failures at joints. On housings for engines and fuel compartments, they are going in for seamless wrap-arounds made from single sections of alloy sheet. Because of the required sheet widths, the product is being rolled on wide plate mills.

Seniority Plan on Trial

A little-noted but highly significant development in this year's auto labor negotiations is Chrysler's area-wide seniority agreement with the United Auto Workers. The 18-month trial plan provides for a Detroit-area pool of laid-off workers with 12 or more years seniority. New job openings in any Detroit-area Chrysler plant will be filled half from the pool, the other half from high-seniority workers in the affected plant.

Dielectric Welding for Trim

Just announced is a production use of dielectric heating. It's being used for bonding and embossing trim materials by all body plants of a major automotive firm. The method imprints decorative designs, such as medallions, without affecting vinyls, rubber and other soft materials.

How 1,008 Mills Cut Bearing Cost Per Ton Of Steel Rolled

By mounting roll necks on Timken® tapered roller bearings, a rapidly increasing number of steel mills keep production high, downtime low, and hold bearing cost per ton of steel rolled at rock bottom. Here's why:

1. **LONGER BEARING LIFE.** Tonnage records from hundreds of mills demonstrate that the long life of Timken bearings on mill roll necks holds bearing cost per ton of steel rolled, to a minimum.

2. **BETTER MILL RIGIDITY.** Timken roll neck bearings have a unique balanced proportion design that lets you use larger roll necks than ever before possible with tapered roller bearings.

3. **SIMPLIFIED LUBRICATION.** You don't need complicated lubricating systems when you use Timken roll neck bearings. They permit use of simpler, less expensive grease lubrication.

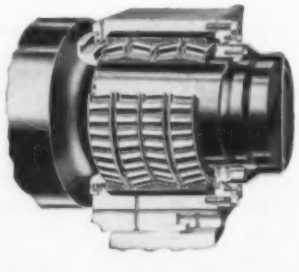
4. **HIGHER LOAD RATINGS.** Balanced proportion design provides up to 40% greater bearing capacity than previous designs for a given mill roll size.

5. **SPECIAL THRUST BEARINGS ELIMINATED.** Because Timken bearings are designed to take *both* radial and thrust loads, they save you the extra cost of special thrust bearings.

6. **STEEL LOSS ENDED IN MILL STOPS AND STARTS.** With mill roll necks mounted on Timken tapered roller bearings, you can start your mills under full load—and end unnecessary loss of steel.

7. **FASTER MILL ROLLING SPEEDS.** Because Timken bearings are designed with true rolling motion and practically eliminate friction, your mills can roll at higher speeds than otherwise possible.

You can get all these advantages in existing or new equipment when you specify Timken tapered roller bearings for your back-up and work rolls. Get complete details from our specialists. Just call or write The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable: "TIMROSCO".



TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS ROLL THE LOAD

TYPICAL TOUR: Russian group chief Borissov is flanked by Armco's Ora Clark, AISI's Merle Thompson.

Soviet Steel Men Tour U. S.

They'd Like to Buy Strip and Tube Mill Equipment

Exchange group winds up 30-day visit to U. S. mines and mills. Impressed by friendliness shown at most points, calls trip a success.

Shows drive to boost output of consumer goods in USSR.

■ If Russian visitors to American steel plants were impressed by what they saw, they concealed it pretty well. For public consumption, this was expected.

But from the questions they asked in mills and mines there's no doubt about where their interests lie. And they proved it by writing up a multi-million dollar shopping list for U. S. steelmaking equipment.

The Russians apparently are dead set on: (1) Improving technology in mining, sintering, and rolling; (2) expanding output of consumer-goods steel products; and (3) stepping up oil country operations by boosting tube production.

The list is long—They would like to buy a continuous cleaning and pickling line, continuous annealing galvanizing and electrolytic tinplate lines—and they're very much interested in a big tube mill. Any such purchases, if cleared by Moscow and Washington, would be one-shot deals which the Russians would copy, "improve" and produce themselves.

Nineteen high-ranking steel and mining executives of the USSR recently completed a jampacked 30-day U. S. tour. Thirteen of them visited steel centers. The other six, all experts in mining of iron ore and coal, spent most of their working hours in ore pits and in mines. The American Iron and Steel Institute handled tour arrangements.

Return engagement — The Russians, who were returning a similar U. S. visit to the Soviet Union last summer, were surprised by the friendliness of most of the Americans they met. Before they left,

a few were on a first-name basis with some of their American hosts. Alexander F. Borissov, chief of the delegation, said that he felt the visit had been well worth while. And like many an American steelmaker who visited Russia, he felt the exchanges should be continued.

Other areas that caught their attention are based on the time they spent on them in mills visited. These included: Inspection methods and equipment; steel product quality and variety; production scheduling; oxygen plants and use of oxygen in iron and steelmaking.

Ore processing—The miners were particularly interested in sintering and pelletizing. They saw great promise in taconite, liked the deep level mine pumps they saw and a three-jet rock drill. They felt that some plants paid too little attention to crushing, left too many large pieces in the furnace burden. They also felt that some sintering beds were too deep (20 in.), thought 10 in. more efficient.

Areas of which they were critical included: Inability to operate equipment at capacity due to lack of orders, lack of standard practices from mill to mill, obsolete equipment requiring "too much manpower," and short openhearth roof life. They wanted it understood that these criticisms were meant to be constructive.

TRIP WAS RUGGED: Like last summer's U. S. visit to Soviet Union, Russians kept on the move. Here Armco engineer Baur follows two Russian engineers down steps at coke plant.

First stop, Detroit—On their first mill stop at McLouth Steel in Detroit on September 18, the steel group fell a bit behind the day's schedule as they inspected the company's electric furnaces and new sintering plant. Surprisingly, they spent very little time on the oxygen steelmaking (L-D Process) units. This despite the fact that McLouth has four, two of them larger than anything the Russian's have or appear to be planning.

They are interested in National Steel's 550-ton openhearths at Weirton and Great Lakes, and in the 12-ft wide sintering beds at the latter plant. They have neither openhearths nor sinter plants that size in Russia.

Strip rates high—At National's Weirton plant they spent a lot of time studying the new 7000-fpm tandem mill and went from coil production through the new continuous cleaning, galvanizing, annealing, and electrolytic tinplate lines very thoroughly.

They also asked a lot of questions about the large Weirton oxygen plant. It makes oxygen for openhearths and blast furnaces at half the cost of the few oxygen plants now operating in Russia.

On capitalist management—Delegation chief Borissov joined with several associates in two four-hour sessions with National Steel management people talking production scheduling. They appeared fascinated by the technique of translating a customer's order into a shipment because they receive their rolling schedules a year at a time, subject to minor quarterly modifications.

They refused to be impressed by the size of U. S. Steel's Gary Works. Some asserted that their Magnitogorsk plant outproduces Gary. But there, as at Fairless Works, the

continuous strip mills seemed to rivet their attention.

Auto body steel — At Cleveland they checked carefully on how Republic Steel makes big slab ingots for wide sheets and deep drawing quality automotive steel. The company's Central District electric furnace operations came in for favorable private comment on the wide range of sizes and variations in alloy steels; they checked heat details on six different types of stainless steel. Quantity didn't impress them, but quality did.

At Republic's Steel and Tubes division the interest was in gas and electric welding and in electromagnetic inspection of tubing. The Russians are apparently very much concerned with improving their tubing production and quality. At the moment they don't permit welding for high pressure work—apparently because of lack of adequate welding and inspection methods.

Critical on capacity—Their reaction to Inland Steel's operation was to pay tribute to the organization and operation of the shops and the wide product range. Here, as elsewhere, they commented on lack of capacity operations, "We operate what we have more fully than you Americans do," said a top ranking Russian engineer. Propaganda digs like that were taken in stride by Americans who had dished out some of their own in Russia last summer.

One Russian openhearth man felt that use of oxygen would be more effective if baths were deeper. He felt that a large hearth area with a shallow bath lost effectiveness, thought that 8 to 12 inches more bath depth would be more efficient.

Longer roof life—He also suggested that aside from a superior suspension system for basic openhearth roofs, the brick might explain the longer life of such roofs on Russian furnaces. A "pre-burned brick" might be better than the chemically bonded brick used in the U. S., he thought.

Russians Talk Turkey . . .

The head of the Soviet delegation, Alexander F. Borissov, is a clear-cut example of the hard-driving Soviet steel executive. He is deputy chairman of the State Planning Committee in Moscow.

Because of the complete collectivization of all industry in the USSR, Mr. Borissov's job cannot be logically compared with any in the U. S. A.

But put it this way: If the steel industry in the U. S. were nationalized, Mr. Borissov's job would be the No. 2 job in the steel industry.

All along their tour route the Soviet visitors were interviewed by IRON AGE editors. Principal spokesman was delegation chief Borissov:

"We are here seeking information," said Borissov. "This is not a political mission. Nor are we here to make any unfavorable comparisons between the steel-making practices in the U. S. and in the USSR. We are businessmen.

"We are here basically to promote better understanding between your people and our people," he declared.

"Russia is too busy catching up with its own steel demands to pour metal into foreign shipments." . . . (but the USSR will strive to fill any orders that happen to be lying around):

Q.—"How soon will the Soviet Union begin shipping steel into North America?"

A.—"When there are customers, deliveries will be made."

Q.—"Is Russia making any effort to drum up steel trade?"

A.—"We're interested in fostering trade. Where trade is established goods will appear."

Q.—"What has most impressed you about American mills?"

A.—"Good equipment, great productive capacity."

"They (the workers) always welcome new mechanization," said V. Piskaren, one of the Russian visitors. "It makes labor easier, and it contributes to reduction in the working day."

Well, what do Russian steel men think of American steel plants?

Some are really good, some are not so good—not as good as their Soviet counterparts, members of the visiting group declared.

"We've seen lots of obsolete equipment and some obsolete methods," said one. He said he found it hard to see how some American steel companies could meet competition with their better-equipped competitors.

"I'd advise some American companies to get busy and modernize," he said sternly.

"We have what you call warehouses," said Mr. Borissov," which are set up in about 100 industrial communities, sometimes as many as three in a big area like Moscow or Leningrad. They handle about 20 pct of all steel made in the USSR. To get steel from one you must have a directive from Moscow.

Mr. Borissov missed no opportunities to get in his political licks. Asked why there are many small steel furnaces in China, he smiled and replied:

"I don't know. But if you people would recognize the Chinese government you would have an opportunity to find out."

Mr. Borissov refused to be drawn into any comparisons between U. S. steel-making efficiency and that in the Soviet mills. "We did not come here to look for defects," he said.

Steel Supply Starts to Tighten

Wary Buyers Are Keeping Eyes on Mill Performance

So far, the fourth quarter upturn is proceeding at an orderly pace.

But a sudden spurt of scare buying could touch off a critical shortage.—By G. J. McManus.

■ Steel users will be watching their supply lines with special care in the next 30 days. Pressure for a demand explosion could reach a critical point in this period.

Here's why: Consumption of steel is rising at a time when steel inventories are hitting a five-year low. Steel production is rising past the point where prompt deliveries can be made.

Freight Jam Looms — At the same time freight car loadings have been climbing steadily. With a high percentage of railroad equipment out of commission, there is growing chance of a serious shipping jam.

Any one of these elements could trigger a wave of scare buying. Both the mills and steel buyers are confident the upturn will proceed along orderly lines. They point out there is ample capacity to meet any needs that can be expected.

Some Are Alert—But smart purchasing men are not ruling out the possibility of a scare spiral. The word has gone out at one big buying center: Cover yourself further ahead. Watch delivery performance.

Steel buyers realize that timing can be critical in an upswing. If demand gets a big enough headstart on supply, a long distance race begins. Many feel a significant gap could open in the next month or so.

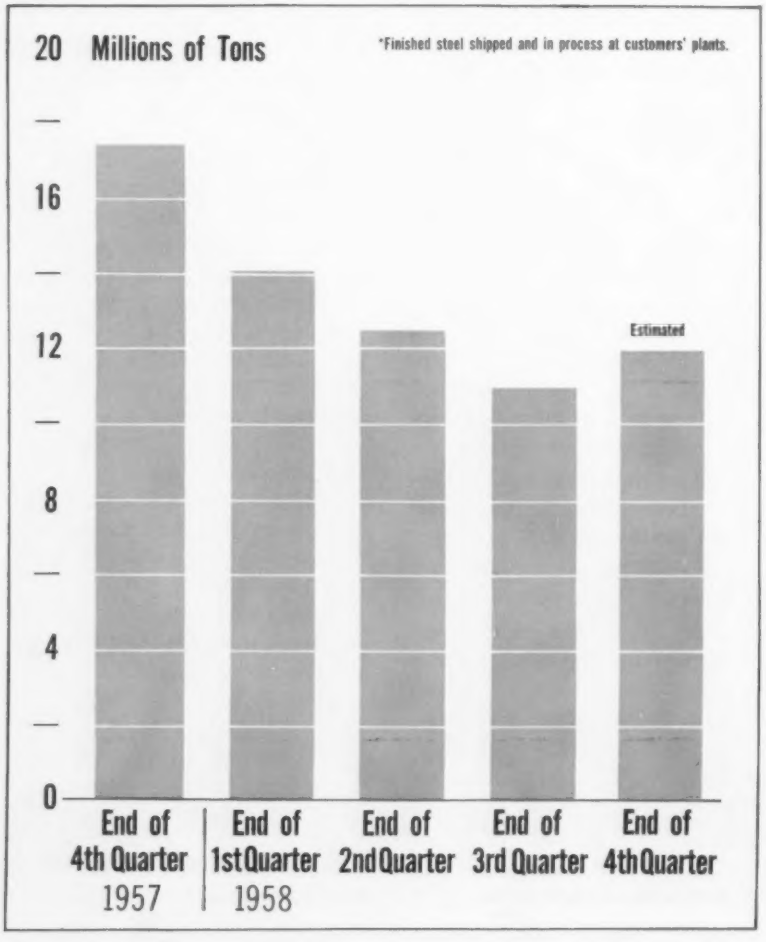
Turning Point Near—Within the next few weeks, steel mill operations will go over 75 pct of capacity. It is at this point, say veteran observers, that an important change takes place in steel mill service. Deliveries stretch out. The mills can no longer afford to fuss over small quantity orders.

The delivery stretch-out has already begun for some products. Cold rolled sheets were available in two or three weeks a short time ago. Now mills are quoting five weeks minimum delivery. Bar mills say they are on the brink of longer lead times. Stainless producers warn that their backlogs are growing.

Overbooking for November—At the first sign of extended deliveries, alert buyers began booking ahead. In many cases order quantities were boosted too. But some plants are still holding down inventories and order volume.

The danger for them is that longer lead times are often accompanied by shipping delays. Mills have overbooked in the past. There are already cases where November

Steel Stocks*: Buildup Starts



How 'Big Steel' Figures Steel Stocks

Harold M. Ridlon, director of commercial research, U. S. Steel Corp., told an AMA management conference last week how his company estimates the level of steel users' inventories.

"In this area," said Mr. Ridlon, "there is no publicly-available indicator, so we have developed our own. Starting from a base date in the late 1940's, we have contrasted our estimates of steel consumption with the known volume of steel shipments to determine the changes over time in the level of consumers' steel inventories.

"This provides us with at least a rough approximation of the level of steel stocks relative to current and prospective rates of steel use. In many respects this is our most valuable single indicator for a short-run forecast of steel demand.

"We have learned from sometimes bitter experience that steel inventories never stabilize. During periods of business expansion, steel users move to build up their stocks. Typically, the accumulation process continues well after the point at which activity has reached its peak and leveled off.

"As the business cycle enters the downward phase and steel needs decline, users begin to live off their steel stocks. While consumption is falling, steel shipments fall even faster; and steel inventories are rapidly reduced. At the low point of a recession, steel stocks usually are at rock-bottom levels.

"At the first signs of an upturn in demand for their products, steel-consuming industries move to build up their supplies; and the next round of the inventory cycle is under way.

"These wide swings in inventories are intensified in both directions by conditions of supply. On the upswing, steel users are likely to increase their orders beyond immediate needs because of fears of developing shortages or slower delivery schedules. On the other hand, when steel demand is weak, consumers tend to push the inventory load back on the mills, since slack conditions usually mean quick delivery

"In a situation such as we have today, with stocks at an extremely low level and the outlook improving for steel-consuming industries, our short-run forecast would include an allowance for a gradual buildup in steel inventories."

schedules are overloaded on certain products. If the current lift produces widespread order delinquency, shortages could be painful.

Carloading Picture — Even if mills are able to handle rising volume in a smooth, prompt manner, there could still be delays. Chairman Howard Freas of the Interstate Commerce Commission has said that "even a moderate business recovery will place a severe strain on the available freight car supply."

If carloadings go 10 pct over the 1957 level, Mr. Freas says we will have the worst car shortage in recent history. Railroads have 8 pct of their cars in bad order against 4.5 pct last year. In the Pittsburgh - Youngstown district, nearly 18 pct of the cars are in need of repair.

Other Products Compete—In recent weeks rail shipments have picked up sharply. They ran 20 pct under last year for the first half; currently they are only 6-9 pct behind the same 1957 weeks.

A good part of the gain has come from grain shipments, which are running 4.5 pct over last year. If other products start moving faster very soon, a squeeze could develop. In another 30 days, grain shipments figure to taper off and there will be slack for a general rise.

Steel Stocks Low — Right now would be the worst possible time for shipping delays. Steel inventories are down to about 11 million tons. That is nearly one million tons under the low point of 1954. It is 1.5 million tons under June of this year, when many thought rock bottom had been reached.

Moreover, steel consumption is rising. Domestic shipments of steel jumped by 1 million tons from August to September. There was talk that inventory building was responsible for the gain but steel consumption rose by the same amount. Inventory levels showed no change.

If steel consumption rises faster than expected or steel shipments more slowly, purchasing men may start pushing the panic button.

Then There Are Prices—Apart from the question of availability, the next 30 days may be decisive for steel pricing. One purchasing man reasons this way: There is a 50-50 chance that steel extras will go up around the first of the year. However if ingot rates go up over 80 pct, chances of an early price increase will go up sharply.

Another price aspect enters into the timing of events. The prospect of a price increase Nov. 1 has brought heavy tinplate shipments. These will taper off next month. The last minute rush before the price deadline might be enough to create a general jam.

Why Copper Men Are on Edge

Apparent trends indicate the market is coming out of the recession woods solidly.

Trade is optimistic, but there are some question marks.—By F. J. Starin.

▪ Copper men are torn between apparent trends, which indicate real optimism, and their own "feel" for the market, which is prompting caution.

Copper has been on the bottom for too long for optimism not to dominate. The degree of caution varies from company to company, but is always there.

Moving Ahead—While there are many exceptions, the general feeling is that copper like most metals, is a little ahead of the general economy in moving up out of the recession just as it led the way into it. The expectation is that the economy will catch up, and the improved business in the fourth quarter will be magnified in 1959.

One dissenter agrees the general trend is up, but says buying has improved only slightly.

Fewer Sellers — He says fewer sellers, not more buyers, is the reason for the hikes in copper prices.

The supply picture looks like this:

International Nickel, which normally produces about 100,000 tons per year as a nickel by-product, has been idle about a month.

Five major mines in Southern Rhodesia have been struck even longer than this.

Kennecott's Chino, N. M., works, which normally turns out about 60,000 tons of copper per year, is also struck.

On the outlook for 1959, another seller believes copper business will pretty well parallel the national economy. And here is what he predicts for the economy:

National Economy — The gross national product may hit $462 billion. This would be a new and inflated high. In 1957 it was $440.3 billion, and this is not likely to be topped this year.

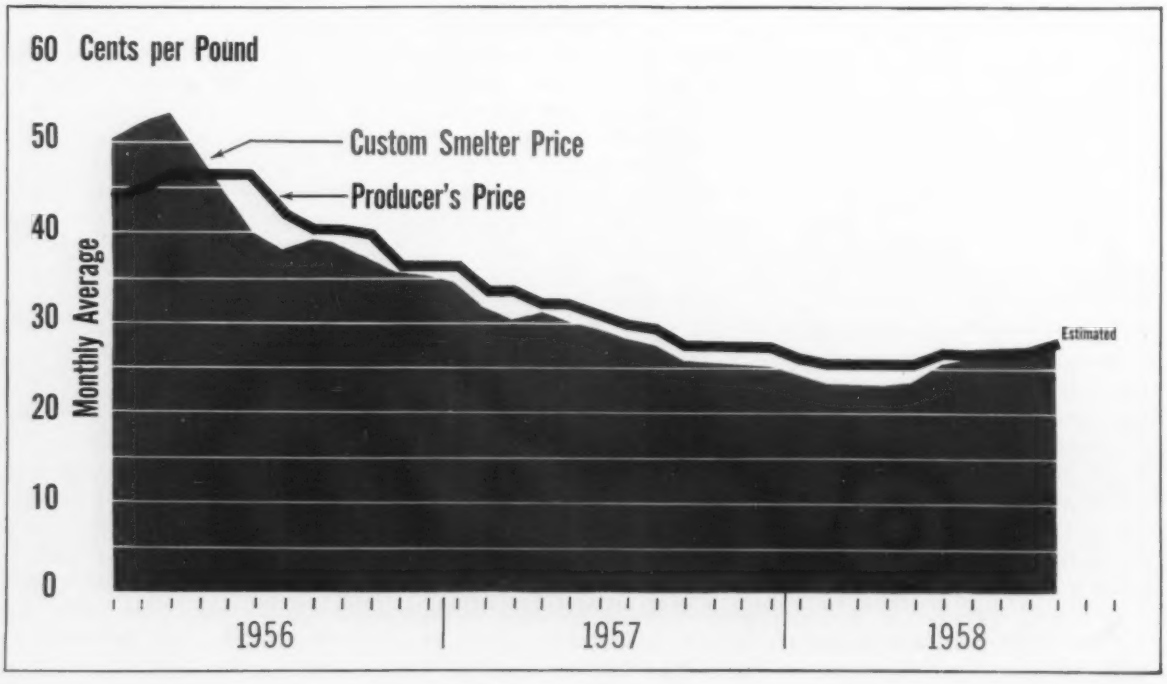
He guesses the Federal Reserve Board index at an average about 152. In both 1956 and 1957 it was 143.

If these predictions are right, copper sales would definitely have a shot at a new high. But they may not hit it.

This copper economist figures the FRB durable manufacturers index, which hit 159 for 1956 and 160 last year, will average 157 next year. First half 1958 average was 137. Yearly average is likely to be about five points higher.

Here is the picture in the various segments of the copper industry:

Copper Prices Are Firming



Producers—There has been a "definite improvement." Generally the sales people believe some of this is hedging against long strikes and higher prices.

Custom Smelters—The smelters are doing land office business.

The price has been moving up steadily and is not likely to stop yet. Some observers predict it will hit 30¢ before the year is over. A few even look for 32¢ smelter copper this year.

Two indicators: (1) Scrap dealers (scrap is a large part of the smelters "raw material") are holding back large tonnages of copper scrap for expected higher prices, (2) From time to time smelters are quoting monthly average as a selling price.

Warehouses—This is perhaps the most conservative group. All acknowledge only slight increases in buying. Some say the market has begun to firm in the last 6 to 8 weeks. Others say the recession really "broke" in June and that buying has been heading up very gradually since.

Imports—Business in the fourth quarter is about on a par with the rest of the year, and is not expected to improve much. The reason: The copper price in Europe is now higher than in this country. About this time last year, when imports were becoming number 1 on the brass mill's gripe parade, one big advantage to imports was a much lower copper price abroad.

Brass Mills—They took the biggest drop in the recession, but seem to be the strongest in coming back. One mill figures September business was 20 pct over August, and 25 pct over the first half average. And he is doing even better in October.

Another, admittedly more conservative, says merely that business has been moving up steadily from the low in late April. Construction buying is definitely a major factor. For the first quarter 1959, the mills see a continuation of the upward move.

Will Public Accept The New Cars?

▪ Will Dave McDonald of the Steelworkers heed the trend exhibited in the new auto contract? Will the steel companies take the firm stand the auto companies took? Is the new auto contract really inflationary? Does the moderate and self-effacing approach of the new General Motors' team of President and Chairman represent a new trend in the company? And finally will the new cars go over or will we have to wait until 1960 to get the full effect of boom automotive activity?

Those were the major questions asked in the corridors, in the clubs and in the press conferences during the GM Motorama at New York last week. (See page 38.) There were fairly definite answers. It all depended upon whom you talked with.

McDonald Aims High—Chances are that Dave McDonald couldn't care less what Walter Reuther did or did not get. He will aim his demands at the blue sky as a means of closing the ranks in the Steelworkers and striving to get reelected in 1961. But it was clear that Mr. Reuther came down quite a few pegs in his latest "clash" with car makers. The auto firms won a resounding victory and GM officials could hardly conceal their satisfaction.

As to whether steel companies will take a firm stand: That they will do and intended to before the auto pacts were signed. It was even a question among some of the GM guests last week as to whether the auto firms actually took a really strong stand. But by and large it was agreed the Big Three were no pushovers. Some unnamed officials believed that at least the hard GM posture paved the way for a strong steel stand next year but that may have been mere talk. Judging from private steel officials' talk, they intend to be a lot rougher than the auto firms were.

Take Your Pick—There are two schools of thought on whether the auto pacts were inflationary—public and private. The public school of thought says they aren't. The private school says they have to be because the agreement cost money and the price of cars went up. Any other tack takes on the aspect of a long and circuitous stack of economic arguments known as "throwing the book at him."

Probably one of the biggest surprises was the smooth working and meshing of the team of F. G. Donner (Chairman) and J. F. Gordon (President), new heads of GM, who pushed the soft pedal down in their first major public appearance. So much so that a few of the reporters who are usually loaded for bear were left without questions—or answers.

Sales Outlook—The public and private estimates of total car sales next year were all over the map. You could take your pick. If you are still pessimistic about the economy maybe 5 million will look right. But if you were about the average at last week's series of top level gatherings you will figure close to 5.5 million cars will be sold. And if you are more optimistic than most—and remember how far off the track some GM officials were in 1955—you will not be surprised to see total car sales of 5.8 million. There is some chance that the really big year may not come until 1960. If that is to be the case the auto industry will be doing well to sell 5.1 million cars in this country from American-based plants.

Instrument Sales Head for Record

Instrument industry sales are rebounding sharply from their first half slump.

They seem headed for new, all-time high either this year or next.

▪ Sales gages in the instrument industry are again pointing upward. They seemed headed for new, all-time highs during 1959 after a drop earlier this year.

It's estimated instrument sales slumped about 15 pct below the levels of second half 1957 between January and June this year. But government sources expect second-half 1958 sales will about equal the $1.5 billion estimated for second-half 1957.

Growth Every Year—Estimates of the annual sales volume of instruments range upward from $1.16 billion. For both 1957 and 1958 government sources place the value of instrument sales at $3 billion. Because of the current upturn, sales this year stand a good chance of again reaching the record $3 billion level of 1957. They might top it.

Widespread Strength — Where does the industry get its sales strength? Basically instruments, which regulate anything from guided missiles to the temperature in distilling bourbon, are a growth industry.

Their average annual rate of sales increase is between 5 and 15 pct. The industry hit a 15 pct growth rate as early as 1947. In later years this pace fell off a bit. Now, however, it is once more increasing and could approach the 15 pct figure again next year.

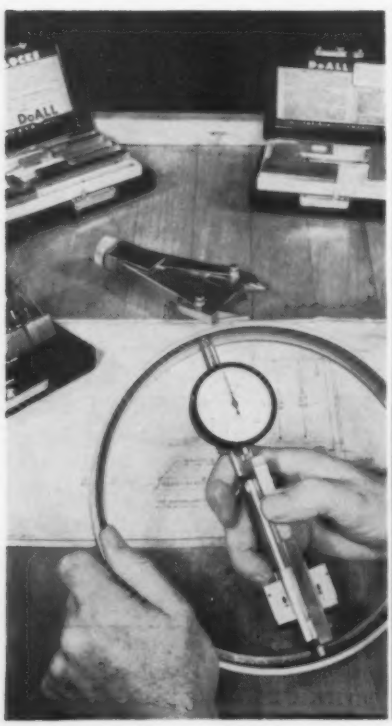
Presently instrument orders are coming from a variety of markets.

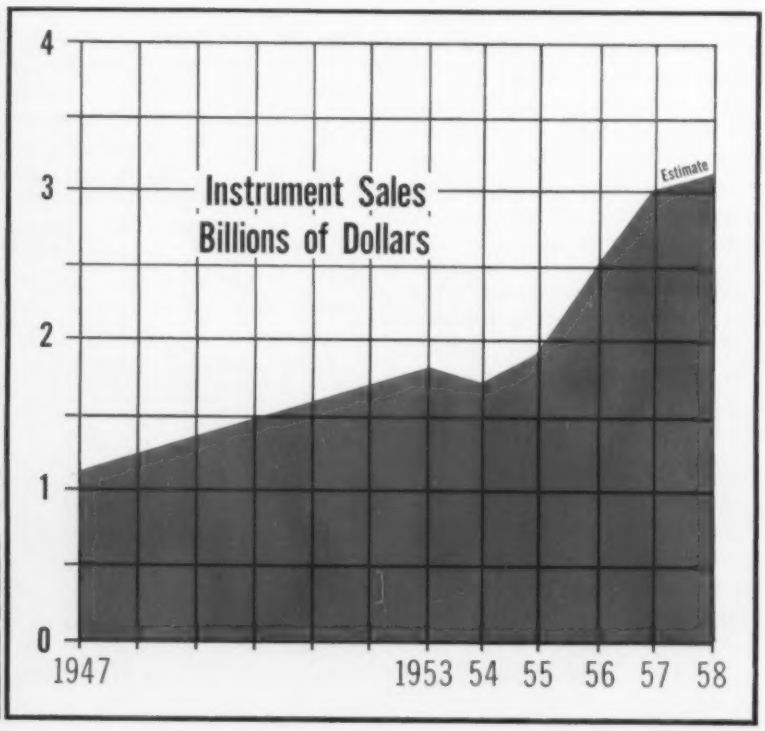
Export Helps—The export outlook is good. While Uncle Sam has taken a beating in export sales of many products, precision instrument exports amounted to $128 million in 1955: They hit $164 million in '56; $217 million in '57; and should near the $250 million mark in 1958. U. S. instruments are moving strongly into nuclear and chemical applications overseas.

The domestic outlook is equally good. Colleges and universities, already strengthening their science courses, are a $2 million per year instrument market. Instruments for reliability tests of electronic components are a $25-50 million per year market.

Missile Applications—Reliability of missile and aircraft components

Instruments: Moving Out of the Slump





is an Armed Service target of first importance. More extensive test requirements for military gear are coming as well as increased purchasing by the Armed Forces. Missile expenditures alone are figured at $2.5 billion in '58, and will rise in 1959 to $4.5 billion.

Chemicals and petroleum are important instrument buyers. Anywhere from 1-15 pct of a chemical firm's capital dollar is spent for instruments. The range for a petroleum refining firm runs from 2.5-12 pct. Other industrial applications are of growing importance, however.

Blast furnace charging, machine tools, rolling mills and presses use an increasing amount of hydraulic, pneumatic and electrical controls and instruments. Single installations here may represent a $250,000 outlay.

Plant Revamp Expected — Despite the fact that the chemical and petroleum industries have been reported heading into a capital spending decline, instrument makers are strong on the industrial outlook. They feel instrumentation in other industries will continue at a very strong pace during 1959 as obsolete facilities are revamped. And they feel that chemical and petroleum can't be written off.

Instrument men believe the capital equipment rebound in the chemical industry, particularly, will be surprisingly sharp.

Research Minded — The instrument industry is research minded. Its actual research expenditures average about 4.7 pct of the sales dollar, compared with a national average of less than 2 pct. Robertshaw-Fulton Control, for example, recently announced a $950,000 outlay for its fifth research and development center. One instrument maker has introduced a counting device that will tabulate a flow of 3000 units per minute. Many of the new instruments are specifically designed for new markets—nuclear instrument sales this year will amount to $40 million and are expected to rise again next year.

New Titanium Alloys

They're Expected to Land New Markets

Titanium has been losing some aircraft and missile applications to high-strength steels.

Here's why they expect to reverse the trend.

▪ A new titanium alloy which can hold its strength at 1100°F for long periods is out to win back some of the aircraft and missile applications going to high strength steels.

Mallory Sharon Metals Corp., Niles, O. has announced a new titanium alloy—MST 881—for use in Mach 3 (about 2000 miles per hour) jet engines, manned aircraft, and missiles. It is reported to have strength properties exceeding most steels for long periods at up to 1100°F, and for short periods to 1500°F.

Breakthrough—The development was hailed by Frank H. Vandenburgh, company president, as the "cracking of the high temperature barrier which has in the past affected the use of titanium and its alloys." The alloying elements—8 pct aluminum, 8 pct zirconium, and 1 pct tantalum and columbium combined—resulted in the MST 881 designation.

Barriers are being pushed back on other fronts, too, with four other new alloys just announced by Mallory Sharon. A new aluminum-vanadium alloy has boosted vanadium content to 16 pct, from 4 pct. Its heating cycle coincides with the brazing cycle for honeycomb structures. It is being pushed for this use.

New Market—"We feel the new MST-2½A1-16V will give a better strength/weight ratio for aircraft honeycomb than other materials in the 250°-700°F range," says Mr. Vandenburgh. "Most newer aircraft require operating temperatures within this range for the honeycomb so designers can save some weight with the new alloy."

The new alloy also has higher resistance to hydrogen, but thin gage must still be heat treated in inert atmospheres like other high-strength materials. Several shipments have been made in thicknesses of .002 in. and .010 in.

For Jets—Another new forging alloy, MST 821, is intended principally for jet engine rotors and blading at higher operating temperatures. Several blades are now being evaluated. Another new one—MST 185— is experimental, and has shown tensile strengths to 260,000 psi. It may be ideal for lower temperature service. Mallory Sharon hopes it will fill a market in landing gears and ordnance applications.

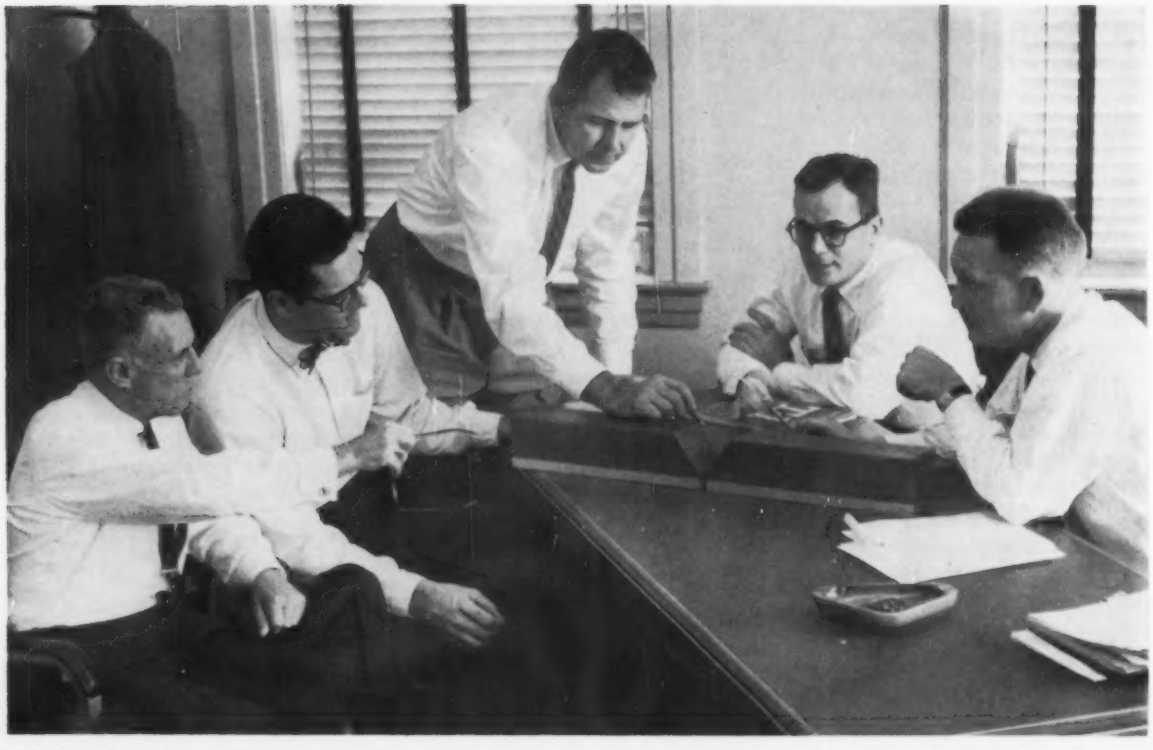
The final new alloy is MST-3A1-2½V, specifically designed for high strength tubing. It can be flared over 50 pct and is weldable.

New Aluminum Bridge

The aluminum industry is really taking an interest in the highway bridge market. The latest entry in the sweepstakes aimed at landing a share of the market now dominated by steel is the Reynolds-Baroni Bridge.

Design—The basic design of this bridge is parabolic. Sections or channels are sheet over spaced parabolas. The sections are joined by triangular templates.

In performance and cost of materials, this bridge is roughly equal to the Fairchild aluminum bridge. Some observers said it might prove to be slightly cheaper in erection cost.



TEAMWORK: Carefully co-ordinated planning is keystone of market development work at Lukens Steel Co.

How Lukens Widens Its Markets

Solving customer problems is a successful way to build sales, Lukens marketers find.

Looking for ways to improve plate welding led the company into marketing a line of welding electrodes.

▪ Build sales by solving customer problems. That's the philosophy of marketers at Lukens Steel Co.

They believe market developers should aid progress of an industry while probing it for sales. And they practice what they preach.

At Lukens the results of commercial research studies are shared with customers or prospects, whenever possible. Market specialists write articles and address society meetings and conventions. Problems of plate users and fabricators are tackled by co-ordinated teams of marketing and technical men.

Successful Payoff—Some results of the Lukens approach to market development include: Wider use of clad-steel plates in coal handling equipment, chemical plants, bridges and buildings. New applications for "T-1" alloy steel which Lukens produces and markets under license from U. S. Steel. Introduction of Plate-Mate welding electrodes—making Lukens the first steel producer offering a complete range of both plates and electrodes.

Help for Buyers—Plate buyers have long consulted Lukens technical service engineers about welding problems. Fabricators ask advice about the welding characteristics of new grades and types of alloy plate.

Formerly when a new type of plate was introduced a year might go by before the proper welding electrode was developed. All this the technical service men reported to Coatesville.

As a result, commercial researchers there made a preliminary study of the electrode market. When the results were presented to management in mid-1956, a full-scale market investigation was approved. Called on for aid were field salesmen, the market service force, technical service personnel and research men.

Test Run—Early in 1957 it was decided to sell a line of welding electrodes under the Lukens name in two market districts—Coatesville and Chicago. Now plans for full scale marketing in the U. S. are nearing completion.

Accent on excellence

Youngstown enameling sheets

For years, Youngstown Metal Products Company has produced millions of drawn stampings and fabricated parts for the nation's leading metal products manufacturers—such as this bath tub component. Their corporate philosophy has been—"to provide a product of highest quality and unwavering uniformity".

To secure continuous high-production runs and consistent product quality, Youngstown Metal Products turns to Youngstown's Enameling Sheets as the basic raw material. They report, "Youngstown Sheets give us the proper blend of tensile strength, durability and surface finish that helps us produce a super product for today's highly competitive market."

Wherever steel becomes a part of things *you* make, the high standards of Youngstown *quality*, the personal touch in Youngstown *service* will help you create products with an "accent on excellence".

QUALITY YOUNGSTOWN SERVICE

THE
YOUNGSTOWN
SHEET AND TUBE COMPANY

Manufacturers of Carbon, Alloy and Yoloy Steel, Youngstown, Ohio

Welcome News for Airport Neighbors

JET MUFFLER: The roar of the big jet engine of this huge F-105 fighter-bomber is reduced to a low-pitched moan in a new $250,000 silencer at Republic Aviation's Farmingdale, N. Y., airfield. Normal conversation can be carried on a dozen feet away while engine is going full blast.

Idaho Bonanza

Idaho's prospectors and metals firms will share a 1958 bonanza: More than $11 million worth of contracts under the Defense Minerals Exploration program. Reports show 28 discoveries of strategic mineral deposits made in what is known as "the gem state."

The discoveries form a supply backlog in antimony, cobalt-nickel, columbium-tantalum, copper, lead, zinc, mica, monazite, and tungsten. Still sought: Fluorspar, mercury, thorium, manganese, and uranium.

Training Dividend

A training program to upgrade intermediate levels of shop labor may pay good dividends. Six Seattle steel fabricating firms joined with the Ironworkers Union to sponsor a shop-and-office training course.

Upgraded laborers can increase company profits, the sponsors feel.

Classes will be held at Pacific Car and Foundry Co., Renton, Wash. Other sponsors: Isaacson Iron Works, Atlas Iron Works, Leckenby Structural Steel Co., Arrow Iron Works, and Taylor-Spotswood Northwest, Inc.

Conveyor for Republic

Republic Steel Corp. will replace hopper car transport of coke at its Cleveland Works with a half-mile long conveyor.

Construction of the large conveyor belt system will allow transport of coke from coke plant to blast furnaces across the Cuyahoga River. Design and building of the conveyor, will take about a year.

Navy Order for Ryan

A $20 million contract for automatic radar navigation equipment has been awarded to Ryan Aeronautical Co. by the U. S. Navy. The order—largest ever received by Ryan's Electronics Div. — will require production extending into 1960.

The self-contained navigation equipment, adaptable for all naval aircraft, will initially be used on Lockheed- and Martin-built patrol planes, carrier-based Douglas Skywarriors, and three types of Grumann aircraft.

Industry Briefs

Material Handling Report—Sales of industrial material handling equipment fell off sharply in August, according to the Material Handling Institute. Dollar volume index for that month was 104.46, using 1954 as the base year. This represents a decrease of 22 pct from bookings reported in July.

Ordnance "First" — American Machine & Foundry Co. has succeeded in automating the assembly and inspection of 75 and 90 mm ammunition for the Army Ordnance Corps. Machinery used in this "first" in the ordnance field was designed and built by AMF's Mechanics Research Div., Chicago.

Joining Forces—Kennecott Copper Corp. and The Okonite Co. announced plans to affiliate. A contract has been signed under which Kennecott would acquire through a new subsidiary the properties, assets, business and good will of Okonite in exchange for shares of Kennecott common stock on a share-for-share basis. It is subject to stockholder approval.

Geodesic Plant—Union Tank Car Co.'s new all-steel building in Baton Rouge, La., is being acclaimed as the world's largest circular building. The giant yellow and blue "Union Dome," which serves as a regional tank car repair and maintenance facility, is reportedly the first major industrial application of the geodesic principle of design.

Ford's Lorain Plant—Ford Motor Co. opened to the public its giant, new Lorain, O., assembly plant for the first time. The 1.88 million sq ft plant is situated on a 250-acre site overlooking Lake Erie. Vehicles assembled there are shipped to dealers in the eastern Great Lakes region.

Gardner-Denver Announces — Forging operations are under way at Gardner-Denver Co.'s new plant in Denver. Heart of the plant is a 36,000 sq ft prefabricated steel building housing a new forge and trim press unit and three smaller forges. The site offers the firm room for future expansion and consolidates Denver area forging operations.

U. S. Steel Uses Load-O-Matic for Heavy-Duty Scrap-Salvaging Operation

Westinghouse Load-O-Matic hoist control panel for this 125-hp, 25-cycle installation.

Hoisting a heavy roll-end hour after hour for crushing open-hearth slag during scrap-salvaging operation is rugged duty for any crane—and on this 60-ton Alliance crane Westinghouse Load-O-Matic* assures long, dependable operation at the United States Steel Corporation's Ohio Works.

Because Load-O-Matic is a heavy-duty, yet precision a-c crane system built to industry standards, it is highly favored for applications that call for unusual stamina, ease of operation and low-maintenance cost.

The Load-O-Matic system with stepless speed control over the full load range eliminates initial cost and complexity of d-c conversion equipment. Components, including controls, motors, brakes and gearing, are Westinghouse Power-Up products, built to work together and backed by Westinghouse unit responsibility.

To see Load-O-Matic in operation, call your local Westinghouse salesman. For more information, write Westinghouse Electric Corporation, 3 Gateway Center, P.O. Box 868, Pittsburgh 30, Pa. JI-96124

*Trade-Mark

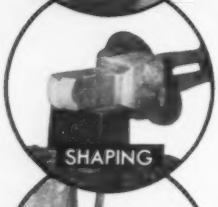
YOU CAN BE SURE...IF IT'S

Westinghouse

A Chambersburg Flat Die Hammer will save time and money in any shop · · will quickly pay for itself

A 200 LB. CHAMBERSBURG PNEUMATIC HAMMER • SELF-CONTAINED

A 400 LB. CHAMBERSBURG SINGLE FRAME GENERAL UTILITY HAMMER (STEAM OR AIR)

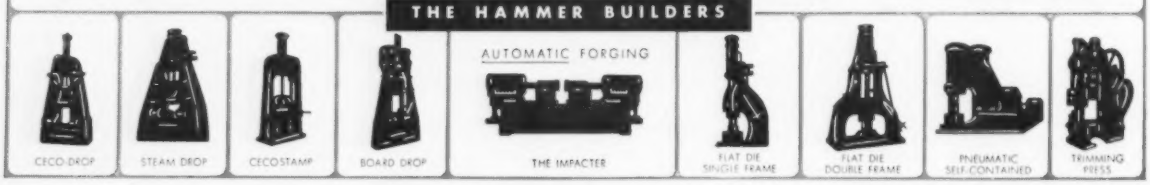


A small or moderate size flat die hammer is a great convenience for any shop where machinery repair or maintenance work is carried on. You can save time and money and often make a better repair part than you can buy, or make by casting or welding. When you need a replacement part in a hurry, or an emergency job of even unusual size, that's where a Chambersburg hammer will pay for itself. If you have steam or air available, a single frame steam hammer will be your logical choice. If not, a Chambersburg pneumatic, with motor, compressor and hammer in one, will be your best bet. Write for complete information.

CHAMBERSBURG ENGINEERING COMPANY . . . . . CHAMBERSBURG, PA.

CHAMBERSBURG

THE HAMMER BUILDERS



Col. Gervais W. Trichel

An Ex-Soldier Makes the Grade

Col. Trichel is one of a long list of former officers who have made good in industry.

He manages to run Chrysler's Amplex Div. in a military manner, minus cadence-counting and saluting.

G. W. TRICHEL: Elements of leadership apply in an army or a plant.

▪ Just how well the military mind can adjust to the ways of private industry is a question that has come up many times at board of directors meetings and in officers club bull sessions.

For Col. Gervais W. Trichel, founder of the White Sands, N. M., Proving Grounds and now president of Amplex Div., Chrysler Corp., the transition was no great problem. The lessons he learned in giving and taking orders at the U. S. Military Academy more than 40 years ago are still valid, even when applied to industry.

Making of a Leader—In his first year at West Point, Mr. Trichel recalls, an instructor explained that military command consisted of three elements:

1. The commander must first make up his mind what it is he wants done.
2. He must explain to his subordinates what he wants done.
3. Then, he must see that they do it.

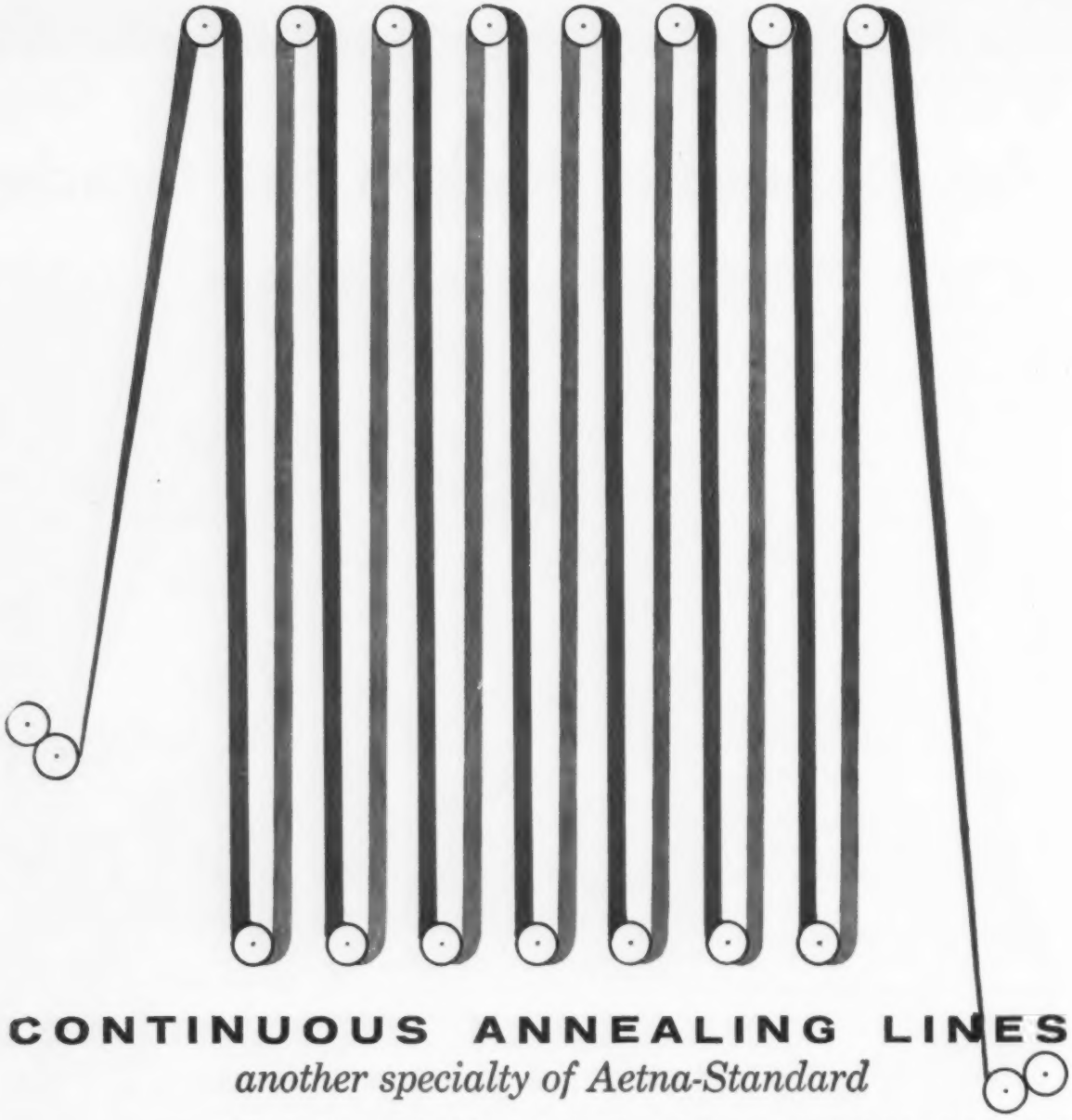
"These apply," says the colonel, "whether you are a successful executive or a military commander. If you skip any one of them you are in difficulty."

Southern Stock — A native of Trichel Plantation, La., Mr. Trichel spent 28 years in the Army after he was graduated from West Point in 1918. He became a noted artillery officer. At the end of World War II, he was chief ordnance officer for the American forces in the Western Pacific.

During his military career, he took time out to get a master's degree from Massachusetts Institute of Technology in 1935 and a Ph. D. in electrical engineering from the University of California in 1938.

Missile Pioneer — The colonel considers his most interesting and important assignment while in the Army was as head of the rocket and missile division of Army Ordnance. It was during this tour of duty in 1944 that he was instrumental in establishing the White Sands Missile test center. The Corporal, Hermes, and Nike projects were begun while he was in charge of the division.

Col. Trichel joined Chrysler in 1946 on the staff of the vice president and general manager, serving until 1951 as special adviser on defense contracts. From 1951 until 1956 he was president of Chrysler's Fargo Div. In 1956, he was chosen to head Amplex Div., which makes bearings and powder metal products for civilian and military uses. He has since become a director and active member of the Powdered Metal Parts Manufacturers Assn.



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another specialty of Aetna-Standard

Like Continuous Galvanizing or Tinning, a Continuous Annealing Line requires good designing and rugged equipment.

Aetna has much experience in continuous processing lines, galvanizing, tinning and annealing. In fact, Aetna pioneered in continuous equipment. Two of the most recent high speed Aetna lines incorporate many new ideas and innovations, permitting sure tracking at high speeds of 1,000 feet and more.

What can Continuous Annealing do for your production and your costs? Aetna's sales engineers can produce some interesting figures.

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Why Capital Spending Holds Up

Managements are cautious, but will relax the budget for new equipment if savings can be shown.

Current upturn also underlines need to keep plants up-to-date and equal to the competition.

▪ In almost every prediction on the strength, and length, of the business recovery is a hedge on capital goods spending.

And with good reason. The (estimated) $75 billion that business has invested in new plants and equipment in recent years is a formidable array of facilities. The additional fact that a lot of this equipment stood idle in recent months is another scare factor.

Leveling Off—However, it may not be that bad. The first inkling of a better capital goods outlook was registered when several recent surveys disclosed that capital goods spending, which had been expected to continue to decline, was leveling off. But why? Most industries appear to have adequate capacity for a substantial boom.

The president of a large industrial concern recently dropped some comments to IRON AGE about his own company's capital goods spending theories. They give a clue to at least one line of management thinking.

Four Reasons—He lists four reasons for making capital goods expenditures. The first, obviously, is when equipment is worn out or does not turn out quality of work demanded. Another reason is for simple expansion, which is not as dead in many industries as you may think.

The third, and most important, is in the area where new equipment will show a greater profit for work done. This could be accomplished in many ways: Lower scrap, faster production, less downtime, and many other obvious shop reasons.

Slow on Automation — But the fourth, and here he moves cautiously, is in the area of automation, or very expensive, involved equipment that adds to productivity but involves a significant change in manufacting methods.

While he did not amplify reasons for caution, some of them could be guessed. In his particular business, heavy equipment, mass production runs necessary for automation are not the rule. But, even though moving cautiously, top management was open to proposals.

Will Spend — In spite of tight money, both at the banks and at the budget session, this company is far from out of the capital goods picture, but is actively looking for areas where spending will provide a profit on the equipment.

In spite of the overall pessimistic viewpoint on capital goods, there are many other companies in the same situation—looking for opportunities where spending will profit.

FRB Index: Over 140 by 1959?

Realistic Approach — You can also expect caution on major projects involving such things as installing automated production lines to be the rule, rather than the exception. It probably will take a period like that of 1956 before you see such a great period of spending.

Management is cautious, but it will buy if the incentive is there. The incentive in this period is profit, however, and it will audit and post audit any spending program. Valid ones will pass, others will not.

Keeps Climbing—Earlier predictions that the Federal Reserve Board's Index of Industrial Production will hit 140 by December appear to be confirmed.

In spite of automotive shutdowns, for strikes and model changeovers, the index for September, seasonally adjusted, climbed another point to 137. A point a month through December now looks like a modest prediction.

Comparative Points—This would bring the industrial production pace at year's end to about the level of October-November 1957, but the difference is that it will be on an uptrend, not a downtrend.

Most of the increase will be in the durable goods sections. Nondurables scarcely declined in the bottom of the recession and have climbed in recent months.

Will Tight Money Stop Homebuilding?

Major concern in home building is whether tighter money will nip the housing boomlet before it can help give a bigger lift to overall business.

Extent of the housing market's comeback is reflected in the total of 118,000 housing starts in September. This is the largest figure for the month since 1950 and represents an adjusted annual rate of 1,220,000. This is the highest rate for any month in three years.

The uptrend has been steady since the nine-year low of last February.

GM Sees Early Rush for '59 Cars

A 5½ Million-Car-Year Is Forecast for the Industry

General Motors is stocking up for an expected flood of car and truck orders.

Company officials cite revival of consumer interest at Motorama exhibit.—By H. R. Neal.

▪ After a year in mothballs, General Motors dusted off its Motorama spectacular for a one-week run in New York last week.

The auto giant used the occasion to introduce to the public nearly everything new in the auto industry for 1959. Not the least of these were its new leaders—Frederic G. Donner, board chairman and chief executive officer, and John F. Gordon, president and chief operating officer.

Good Omen—Earlier visitors to the exhibit gave indications the public hasn't lost all of its interest in automobiles—despite this year's showing. And the auto chiefs made predictions which should cheer the metalworking industry.

They estimated passenger car production, expected to reach only about 4.3 million units in 1958, will rebound to about 5.5 million units in 1959.

Confidence Reviving — Board chairman Donner, commenting on current economic conditions, told business leaders:

"There is tangible evidence that consumer confidence is reviving. As it gains in strength and vigor, further improvement in employment and industrial activity is certain

At the same time he urged business and government to take the "calculated risks" necessary to insure continued economic growth. Economic progress, he said, results from "constructive change" and "the process of change is the process of risk-taking."

Fewer Restrictions Needed — Calling for government officials to take calculated risks favoring investment in times of doubt, Mr. Donner contended: "Our national well-being may better be served by maintaining conditions favorable to a high rate of growth than by imposing unwarranted restrictions which carry false promises of economic security."

Management has fulfilled its responsibility in the past, he said, but warned future growth can only be realized "if management continues to look ahead and continues to take risks." The process of change, he pointed out, assures both "ample employment opportunity" and steady improvement in the nation's standard of living.

Annual Change Defended — President Gordon defended the auto industry's much maligned annual auto change as an example of constructive change fostering mass production and mass ownership of automobiles.

"If it had not been for the annual model change, the automobile as we know it today would not be produced in volume and would be priced so that relatively few could afford to own one," he said. "Our customers would have no incentive or reason to buy a new car until their old one wore out. Not only would this reduce the demand for new cars but it would drastically

TEN YEARS OF TAIL FINS: Today's emphasis on automotive rear-end styling began in 1948 when Cadillac introduced its first aircraft-inspired tail fin. Evolution of the Cadillac fins is shown above.

facts about LEDLOY* FREE-MACHINING STEELS

Inland's Special Ledloy Screw-machining Steels Outperform B1113 and in Certain Cases Brass*

There are two grades of Inland Ledloy Steels that have been developed specifically for automatic screw-machine operations, Ledloy Grade A and Ledloy Grade B.

Ledloy Grade A, the most widely used leaded steel grade, machines from 25% to 55% faster than regular free-machining steels and yet retains all the desirable characteristics. Ledloy Grade A contains .15/.35% lead—uniformly dispersed through the steel so that it has no appreciable effect on the steel except to increase its machinability to a marked degree. Ledloy Grade A retains all the properties of open hearth free-machining steel of comparable base analysis.

Whatever you have been machining from regular free-machining steels you can machine from Inland Ledloy Grade A and increase your machining time up to 55%, and at the same time, obtain a superior surface.

The place of Inland Ledloy Grade A has been so firmly established in the screw-machining industry that the A.I.S.I. and S.A.E. have adopted a new grade designation tailored to its specifications. *The new standard grade designation is* C12L14.

Inland Ledloy Grade B, the fastest machining steel produced commercially today, was developed by Inland to replace brass in the manufacture of parts where machinability is the all-important factor. Ledloy Grade B provides much greater strength than brass, yields more parts per pound and yet machines from 80 to 90% as fast as the more costly free-machining brass grades.

Ledloy Grade B, like Grade A, is an open hearth steel with all the desirable open hearth steel qualities. It is rephosphorized, resulphurized and lead treated. The only difference between the two grades is that Grade B contains a higher sulphur content. This additional sulphur increases the machinability of Grade B over Grade A about 25%.

In deciding which grade of Inland Ledloy is best for a particular part you are machining, weigh carefully the following factors: amount of machining to be done on part, type of machining, machining time per cycle, strength required in finished part and cost of material.

Where average machining is called for, you will probably find Ledloy Grade A the most practical. Where more machining operations per part are required, or where the machining is more intricate, Grade B will probably be more satisfactory. The additional cost of Grade B can be more than made up in decreased machining costs.

Whichever grade of Inland Ledloy is best for your particular machining operation, you will find that Ledloy will provide fast machining and excellent finish for the parts you make. Ledloy, because of its lower friction component and inherent lubricating characteristics, will also greatly increase the life of your cutting tools.

Many grades available—Inland Ledloy free-machining steels are available in a wide range of standard carbon and alloy grades in bar form. Ledloy free-machining plates are also produced.

If your product requires machining, it will pay you to get all the details on Inland Ledloy . . . the original leaded steels. Ask your cold-drawer about them today, or write Inland Steel Company, 30 West Monroe Street, Chicago 3, Illinois, for the interesting booklet, "Properties of Inland Ledloy Steels."

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INLAND

Ledloy Steels
the world's most machinable

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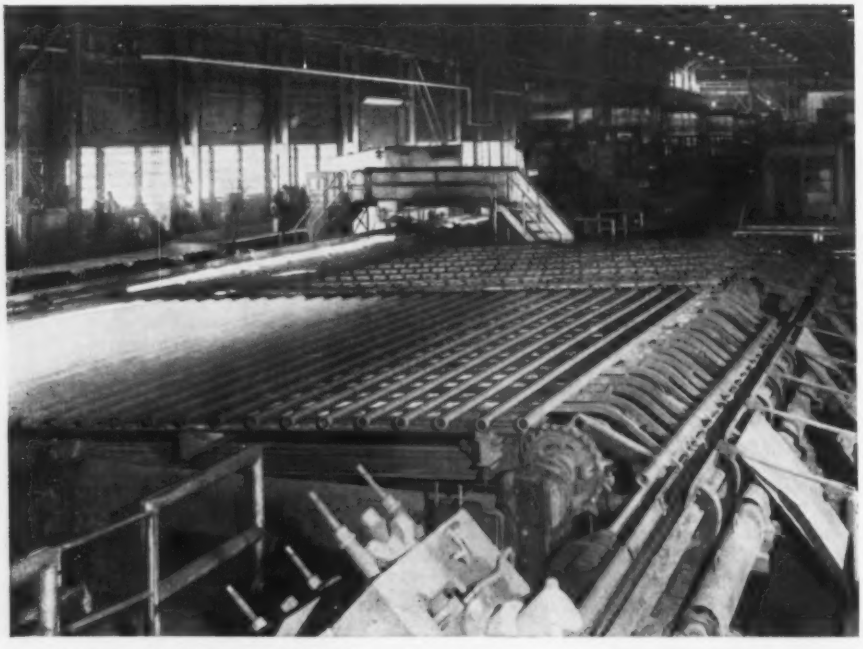
Many metal working operations need the extra qualities of Promal chain



LINK-BELT H CLASS PINTLE CHAIN with pusher attachments on this pipe cooling rack designed by Aetna-Standard Engineering Co. receives white-hot pipe from finishing operations in a continuous butt weld mill. Controlled chain speed permits uniform cooling of outer tube periphery.

Specially heat-treated malleable iron resists heavy and abrasive loads

Fewer conveyor shutdowns and minimized replacements are economies realized by users of Link-Belt Promal chain. Promal will withstand repeated cyclic heating up to 1000° F. Its greater strength absorbs continuous impact loads, and high wear resistance supplies the durability to cope with severe abrasion.

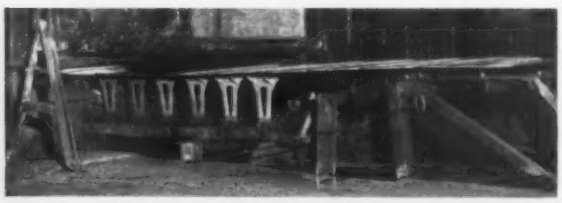
A Link-Belt Development

Promal is more than a partially annealed or surface-hardened malleable iron. Developed by Link-Belt, this specially heat-treated malleable iron is actually transformed into a metal of radically different physical properties. Promal, because of uniform microstructure throughout its whole section, provides greater ultimate strength, higher yield point, exceptional fatigue resistance.

Where and how to apply Promal in the metal working industry

Choose Link-Belt Promal chains for highly abrasive or heat-conditions—for extra strength and wear resistance demanded by heavy loads or long sliding conveyors. They last much longer . . . cost but a little more.

The wide range of Link-Belt chains available in Promal includes all types of cast and combination chains.



SMGL-618 PROMAL chain conveyor is another example of the applicability of heat-resistant Promal in the metal working industry. This chain conveyor with special joint design and riser attachments picks up and conveys sheet steel through furnace. Chain has operated continuously for two years without failure. The heat-resistant properties of Promal also make it a desirable material for use on low-temperature heat-treating equipment.

PHYSICAL PROPERTIES OF PROMAL

Compare this with other ferrous materials used for chain applications.

Yield Point	55,000 pounds per sq. in.
Ultimate Strength	75,000 pounds per sq. in.
Fatigue Strength	35,000 pounds per sq. in.
Elongation	10 to 14% in 2 inches
Average Brinell Hardness	170 to 190

PROMAL'S high strength factors make it ideal for the especially long elevators and conveyors employed in the metal working industries.

HEADQUARTERS for Link-Belt products is your nearby Link-Belt factory branch store or authorized stock-carrying distributor. Refer to the yellow pages of your local phone directory.

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CHAINS AND SPROCKETS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office: New York 7; Canada, Scarboro (Toronto 13), Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World. 14.823

Automotive Production

WEEK ENDING	CARS	TRUCKS
Oct. 18, 1958	45,003	12,663
Oct. 11, 1958	34,834	11,878
Oct. 19, 1957	72,180	21,064
Oct. 12, 1957	38,626	18,860
TO DATE 1958	2,973,574	641,829
TO DATE 1957	4,804,152	866,028

*Preliminary Source: Ward's Reports

curtail the supply of used cars."

Small Car Uncertain—Concerning the small car, Mr. Gordon admitted GM has such a car under consideration. He said the company is "still weighing the pros and cons" and hasn't reached the "point of no return." He declined to say when that point would be reached, however.

Another GM executive anticipated truck sales would share in the improvement predicted for passenger cars. R. C. Woodhouse, general truck sales manager for GMC Truck and Coach Div., forecast 1959 sales reaching a total of 1.1 million trucks for domestic and export use. Next year's forecast includes 900,000 domestic deliveries and 200,000 export.

Forces at Work—He estimated there would be between 730,000 and 740,000 domestic retail truck deliveries this year with approximately 160,000 additional units for Canada and other export points.

Business factors that will favorably influence next year's truck market are the revival in the homebuilding industry, the stimulation of the highway program, and the increase in public spending—particularly Defense and the continuing rise in outlays by state and local governments, he said.

He indicated some of these factors are already being felt. GMC truck sales have been on the rise since February, with August being the best sales month since April, 1957, and September remaining steady.

Strikes Hurt—While availability of auto sales figures, against which GM can compare its predictions, is still a few months away, there are signs the automaker is supporting its stand in practice.

Its auto divisions have all lost several weeks of production due to plant strikes which began even before the UAW strike deadline. At Motorama time, volume production was still not an accomplished fact.

No Buying Cutbacks — Despite this highly negative factor, few changes have been made in immediate buying practices. The company has asked steel companies to continue producing steel according to orders placed. And if the company has been unable to accept delivery at the designated plant, steelmakers have delayed shipment. Where neither has been possible, GM has had the material sent to warehouses to be held until it returns to production.

GM is talking no chances on having its output held back by temporary shortages of parts or material if at all avoidable. At least through the end of the year it expects its divisions to pour out automobiles—in volume.

Ford Polls Car Buyers

Ford Motor Co. recently went after "public opinion" at a full Gallup. In one of the smoothest moves made by an auto company in years, Ford opened itself—and the industry, to criticism. When the gripes were in, the results weren't half bad. And Ford could congratulate itself on keeping its ear tuned to the "voice of the people."

Four-hundred "representative" auto buyers from all parts of the country were selected by noted public opinion pollster Dr. George Gallup to "exchange views" with Ford officials on the auto industry and its products.

The Results—Mr. Gallup revealed the buyers found a number of things they like about today's cars: They are good looking and handle well; they give dependable performance; they are comfortable.

THE BULL OF THE WOODS

HAR-HAR! A GUY HAS TO BE PRETTY BADLY DE-FORMED TO READ A PAPER IN 'TH' BIB OF HIS OVERALLS!
SCRAM, NUISANCE, SCRAM! YOU HAVE WORK TO DO!
YOU'D HAVE TO BE DE-FORMED TO NOT BE ABLE TO DO IT, TOO! I'D LIKE TO SEE HIM TRY IT-- TH' BIB OF HIS OVERALLS WOULD HAVE TO BE ON TH' FLOOR!
AN' THEN HE'D HAVE TO HAVE BINOCU-LARS TO READ WITH--BUT HE'D BE ALL RIGHT, CUZ TH' BOSS WOULD THINK HE WAS A LOADED WHEEL-BARROW STANDIN' THERE!
SHAPES
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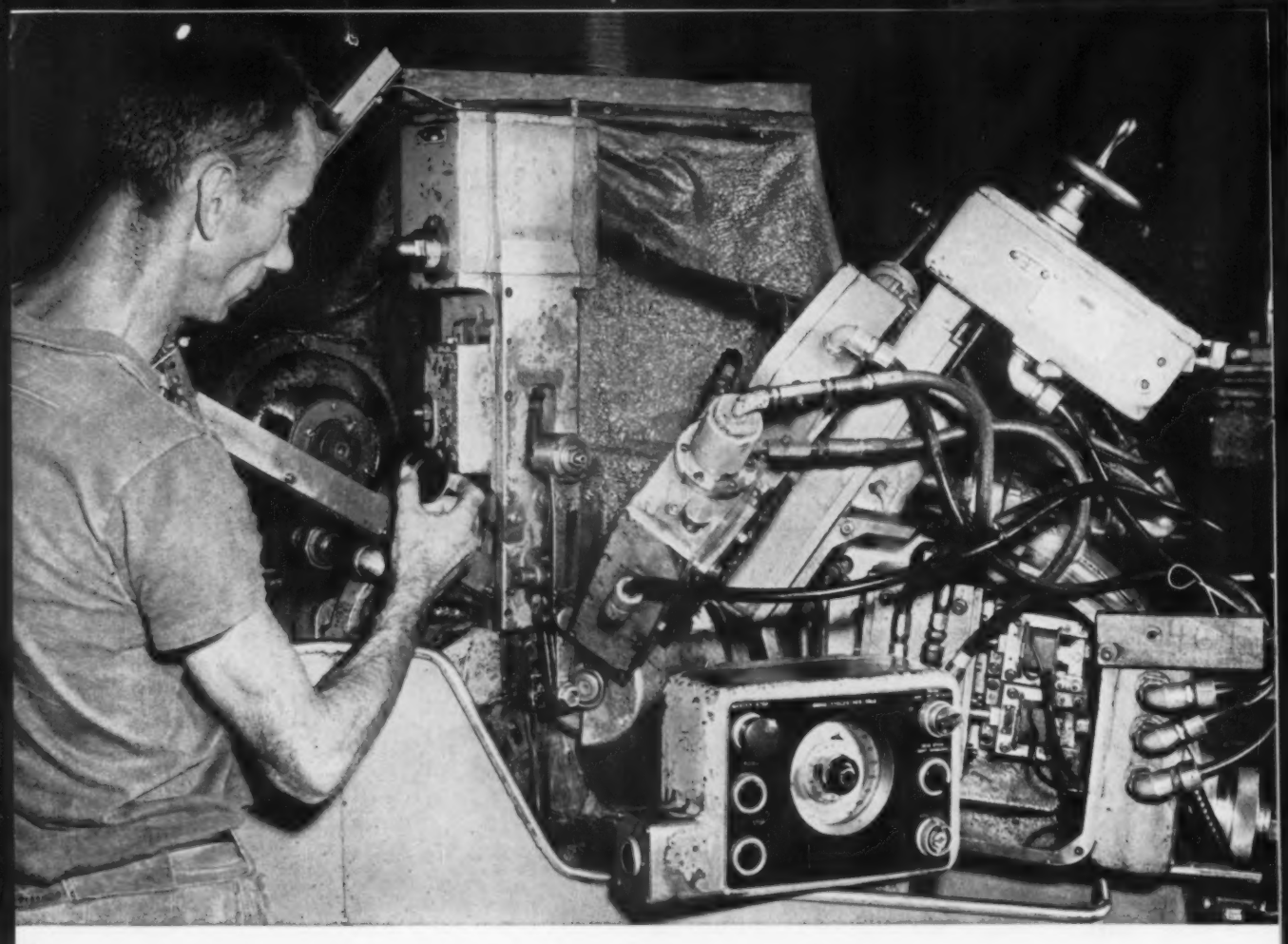

bearing life boosted from

THREE WEEKS TO FOUR YEARS

with Texaco Cleartex Oil

Tyson Bearing Corp., Division of SKF Industries, Massillon, Ohio, extended the life of micro-centric grinder bronze sleeve bearings from 3 weeks to 4 years (and they're still going strong) using *one* oil—Texaco Cleartex B—for both grinding *and* machine lubrication.

Before Cleartex was used, machine bearings would fail in about 3 weeks, because the lubricant became contaminated by grinding oil. With Cleartex this problem simply doesn't exist. A premium quality lubricant, Cleartex is *also* a fine grinding oil. In fact, Tyson now gets as many as 20 pieces per wheel dressing, each with a better finish, compared to the 10 or 12 that were previously obtained.

You can do any machining work better, faster and at lower cost with Texaco—a complete line of cutting, grinding and soluble oils. A Texaco Lubrication Engineer will gladly help you select the right ones for your job. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write: The Texas Company, 135 East 42nd Street, New York 17, N. Y.

LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

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Defense Spending Is on Way Up

Pentagon "Leaks" Word of $1 Billion Rise to Come

Defense outlays expected to hit $42 billion in 1960 Fiscal Year budget.

Planned increase blamed on more and costlier missiles, inflation.—By G. H. Baker.

▪ It's now decided that the next defense budget will call for total spending of about $42 billion. The overall total will be somewhat more than $1 billion over the current figure.

The exact sum will be disclosed about the third week of January, 1959, when President Eisenhower sends his new federal budget to the Congress. But leaks from Pentagon fiscal experts at this point (late October) indicate that the sum total of all defense requirements for the new fiscal year will add up to about $42 billion.

Behind the Boost—Chief reason for the increase: More and costlier missiles.

Secondary reason: Inflation.

Add these two factors together and it is easy to see why defense spending is going to rise by a sizable amount in the new fiscal period (fiscal year 1960), which starts next July 1. In fact, the Eisenhower Administration's budget planners will tell you privately that it's a miracle that total defense costs are not "going right through the roof."

Spending Pressures — For there is strong pressure being exerted on the White House and on the Pentagon for jumping defense spending from the current rate of about $41 billion to a staggering $70 billion a year—nearly double the present rate of military spending and close to the total amount ($73 billion) now being spent annually for all government services, including military projects. Such an increase, short of war, is unlikely at this time.

Railroad Seeks Loan

Government loan-backing machinery, set up in August to aid the railroad industry, is getting its first test.

A request for the guarantee of a proposed $16.5-million private loan is filed by the New York, New Haven & Hartford R.R. This bid for assistance is placed with the Section of Loans at the Interstate Commerce Commission, which heretofore had had no customers.

The New Haven tells ICC it needs the loan to buy 60 diesel-electric switch engines, 30 of which the railroad now has on lease. General Motors Corp., builder of these 1,750-hp engines, would deliver the remaining 30 in mid-1959, according to the New Haven plan.

Maximum amount that the ICC can guarantee in private loans, as provided in the Transportation Act of 1958, is $500 million. This guarantee applies to loans of up to 15 years' duration. Principal uses of the loans are to be equipment buying and maintenance.

Do-It-Yourself

The booming home repair and modernization market shows no signs of easing.

Latest government figures show total spending for these purposes climbed to a new high of $17.7 billion in 1957. This was an increase of $800 million, or 4 pct, over the previous year.

Government housing experts say the rise continued this year and is expected to go up again by about the same amount in 1959.

Residential repair and modernization accounts for about half the total, but about two-thirds of the latest increase.

Meanwhile, a recent poll of housewives shows that 55 pct have definite home fix-up plans, from adding a room or two to painting.

Business Fights Proposed Postal Hike

Businessmen are strongly protesting a proposal by the Post Office Department to boost parcel post rates by an average of 17 pct.

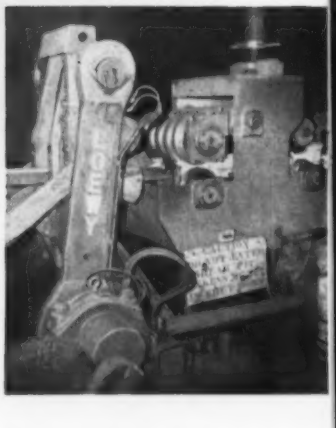
First protest was to be filed at a meeting Oct. 20, with postal officials. An even stronger fight is planned before the Interstate Commerce Commission, which must pass on parcel post rates.

The higher rates will cost businessmen and mail users $88.8 million a year. The biggest jump, 20 pct and higher, would be for packages and catalogs mailed in the local zone and first two parcel post zones.

Businessmen contend that alternative methods of raising revenue to meet a prohibited deficit haven't been exhausted.

Loewy flying shears deliver undistorted billets and clean cuts with close tolerances

▲ Test-shop erection of flying shear built by Loewy-Hydropress to the design of Loewy Engineering Co., Ltd., Bournemouth, England.



Loewy flying shear installed at the delivery end of a continuous billet mill at Keystone Steel and Wire ▶ Company, Peoria, Ill. Closeup view shows the shear with pinch roll unit in operation.

The difficult problems involved in the design of a flying shear for heavy stock—strictly perpendicular cut, horizontal travel, and synchronization with the speed of the material to be cut—are ideally solved in Loewy flying shears.

Due to the kinematics of the blades, the cut material will remain absolutely straight; no bending or distortion of head or tail ends can occur. Further, Loewy flying shears are electrically operated and work on the start-stop principle. For each cut, an automatic pinch roll counting mechanism initiates starting the two main motors to make one cut, after which the blades are returned to their original position. Speed and sequence of cuts can be exactly related to the speed and production of the mill.

Situated immediately at the delivery end of, and in line with, a continuous bar or billet mill, the shear shown above will cut material up to 4 in. square into lengths from 12 ft. up at speeds in accordance with the delivery speed of the mill train.

Loewy flying shears, as an auxiliary to bar and billet mills, are usually supplied with complete billet handling equipment.

Loewy-Hydropress bar and billet mills, merchant mills, skelp mills, blooming mills, strip, slabbing, structural, rail mills, special mills, and all auxiliary equipment are designed and built to customers' particular requirements. Let us know in a preliminary way what you have in mind. We will promptly show you how we can serve you and give you the benefit of every possible economy. Write Dept. A-10.

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U.S. Should Shun Space 'Stunts'

Sound, Long Range Plans Best, Scientist Says

Careful programming of space flights will save lives and money, Dr. DuBridge of Caltech believes.

Other things more important than getting a man into space, he adds.—By R. R. Kay.

▪ "I hope that the first man who loses his life in space exploration will lose it on a purposeful mission rather than a stunt flight."

So says Dr. L. A. DuBridge, president, California Institute of Technology, Pasadena.

Plan With Care — He feels a soundly conceived, long range program of space research will do more to build our world prestige than a hastily concocted series of stunts.

"Even with long engineering research and operational experience, there are bound to be fatal accidents. We can save both human lives and taxpayers' money if we plan our space program with care," says the outspoken educator-scientist.

Keep Cool — The space race should be to add knowledge not beat the Russians in sending up heavier missiles and satellites.

Dr. DuBridge thinks we'll get more for our money if we keep our heads—and if our scientists control the program. He's afraid we'll let the whole thing be guided by "what the propaganda hounds of the Kremlin do."

What about a man in space? Dr. DuBridge, looking at it from a scientific research viewpoint, flatly says a man isn't needed.

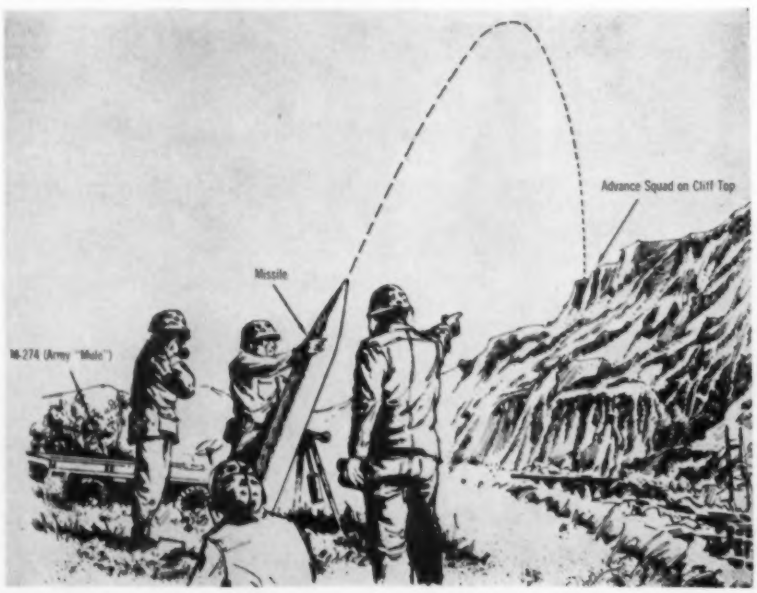
Too Early for Man—Let's not throw our money away, he urges, trying to solve these problems of getting a man up and back: (1) Weight of the man himself. (Every pound of payload needs 100 to 500 lb of fuel.) (2) Sending with him all his food and water, and the equipment to bring him back alive. (3) Shielding him from space radiation.

Use Instruments—Dr. DuBridge thinks there's a vast area of important work for instruments in space before we even talk about sending up a man. Vehicles carrying instruments could do things like this: Measure cosmic rays; determine properties of the earth's magnetic field; conduct geodetic measurement of the earth itself; develop weather mapping; and examine upper reaches of the atmosphere.

Instrument data could be obtained on trips around the moon, to Mars, and other planets; and perhaps even in orbiting of the sun.

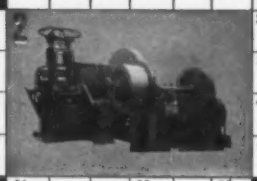
There's plenty of challenge getting proper equipment into space, let alone a man, Dr. DuBridge says. A typical problem is developing a radio-telemetering signal that will carry millions of miles into the solar system.

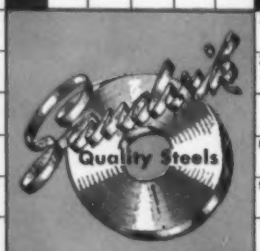
Missile Supply Line for Combat Troops



BALLISTIC CARGO MISSILE: Front line fighters may get supplies by missiles such as that sketched by Convair artist. Payload section could house food, ammunition, communication equipment, or high explosives for offensive tactics. Three-man squad could handle firing.

SANDVIK Clues To The Solution Of Your SPRING STEEL PUZZLES





The pictures above give you some strong hints of Sandvik's ability to supply *exact* answers to your spring steel requirements.

Here's what they represent:

1. EXTENSIVE STOCKS OF SPECIALIZED STRIP STEELS – Cold-rolled annealed, unannealed or hardened and tempered, high carbon and alloy strip – in a wide variety of sizes, tempers and special analyses to fit specific performance demands.
2. ROLLING MILLS – To roll to order the precise gauge you require, if it's not available from stock.
3. SLITTERS – To tailor strip widths to your specifications.
4. EDGE FILING EQUIPMENT – To provide the edge finish required . . . square, round or dressed.
5. HARDENING & TEMPERING FURNACES – To give the proper degree of hardness and flexibility to the strip.
6. QUALITY CONTROL – To give a continuing assurance that Sandvik's high quality standards will be consistently maintained.

With these extraordinary facilities, Sandvik can supply the exact size and type of steel . . . either off-the-shelf or tailored-to-order . . . to suit almost any spring steel requirement.

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OTHER SANDVIK PRODUCTS: Power springs, Coromant Carbide Tools, Sandvik Steel Belt Conveyors, Sandvik Hand Saws and Tools

Building Block Support Swells

Eleven New Advocates Are Gained at Two Meetings

All supporters of this tool building concept are blue ribbon machine tool customers.

Reduction of obsolescence is a factor. Ford's Daum lists others.—By E. J. Egan, Jr.

■ In two quick sorties, proponents of the "building block" concept for production machine tools latched onto some powerful support.

Eleven other major machine tool users now publicly favor the unitized design theory developed jointly by Ford Motor Co., General Motors Corp., Chrysler Corp., and International Harvester Co.

Converts — These blue ribbon firms lined up behind the Big Four after a pair of one-day meetings held recently in Chicago and in Detroit:

Allis-Chalmers Mfg. Co., American Motors Corp., Bendix Aviation Corp., Caterpillar Tractor Co., Cummins Engine Co., Inc., Dana Corp., General Electric Co., International Business Machines Corp., Waukesha Motor Co., White Motor Co., and Vickers, Inc.

News of the 15-firm solid front comes from Henry C. Daum, manager of Ford's machining process department, and chairman of an industry study committee. All companies represented at the two meetings agree the new type construction would reduce machine obsolescence many ways, he reports. And all want to participate in the program.

The Situation—"Until recently," Daum says, "it appeared that automation with its enormous investment in equipment might tend to freeze design in the automobile industry. The large transfer machines . . . particularly those for machining large components, have been highly specialized and difficult to adapt to changes in model and part design."

"The 'building block' concept would permit removing one or more sections of a production line and replacing them with other standard sections that could be adapted to new part design," he explained.

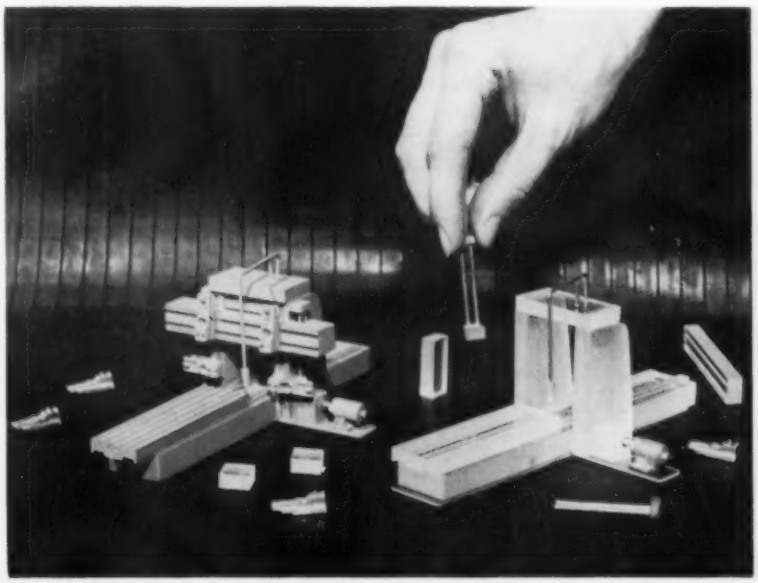
Daum says the 15-firm lineup is not attempting to dictate design features to machine tool builders. Only a limited number of standardized specifications are being recommended, he notes.

For the Public—The Ford man believes the buying public would gain by a swing to "building block" production lines, too. Flexibility of equipment would encourage technological advancement and product design changes, but also cut the cost of these improvements.

Smaller firms will also find it practical and economical to buy unitized-design tools, Daum feels. His reason: "The 'building block' concept . . . appears to be the answer to extending the automatic production line into new areas of industrial use."

Machine tool builders will probably receive the news of this united user front with mixed feelings. Some will like the idea because they've been working toward more standardization in their own lines.

Plan Ahead in Miniature



SCALED TO SIZE: Scott Industries, Inc., Olean, N. Y., believes it's easier and less expensive to move plastic models than heavy machine tools. They are selling miniature, scaled-to-size, assemble-it-yourself machine tool kits for firms that want to redesign their shops.

INDUSTRIAL BRIEFS

Follow That Missile—The Navy has awarded a $165,990 contract to Mid-Century Instrumatic Corp., New York, for missile tracking computers and plotters for the new, Navy - managed, National Pacific Missile Test Range at Point Mugu, Calif.

Tape Trend — The DataTape Div., Consolidated Electrodynamics Corp., Pasadena, Calif., has received a $148,000 contract award from the U. S. Army Signal Corps for the development of a new type of narrow-band data-recording system. The magnetic-tape equipment will be delivered to the Signal Corps headquarters at Fort Monmouth, N. J.

Space Ears—One of the most advanced airborne flight data systems developed, an extremely precise inertial system, is being readied on schedule by Sperry Gyroscope Co. at Great Neck, N. Y. It will be used in the hypersonic X-15 rocket aircraft which will carry a man into space.

Good News for Ryan—A contract for more than $20 million to produce automatic radar navigation equipment for Navy aircraft has been awarded Ryan Aeronautical Co., San Diego, Calif. Contract calls for production extending into 1960.

"Harvey is quitting. He got a better job designing outer space men for the movies."

High Powered View — An expanded line of "Extended Service" light bulbs for high voltage service has been announced by Westinghouse lamp div., Bloomfield, N. J. Bulbs will be available in a range from 100 to 1500 watts. They are designed to offset the high cost of labor involved in relamping.

Back to the Mines — Republic Steel Corp. has reopened its Newfield coal mine at Verona, Pa. on a limited basis. The Newfield mine, closed since last December, is being reopened because of the increased demand for coal resulting from an increase in steel production.

Growing Family — Hevi-Duty Electric Co. Milwaukee, has purchased the Stroman Furnace & Engineering Co. from The Peterson Oven Div. of Baker-Perkins, Inc. The addition of this fully engineered, established line of furnaces will complement the furnace division purchased from Eclipse Fuel Engineering Co. by Hevi-Duty in July, 1958.

Continuous Feature—Solid and tubular bronze bars are now being produced in 105-in. lengths by a continuous casting method by Johnson Bronze Co., New Castle, Pa. The new, long "Continucast" bars supplement the Johnson line of standard 13-in. bars.

Two East, Two West—A $3 million order has been awarded The General Electric Co.'s Medium Steam Turbine, Generator and Gear Dept., to build main propulsion turbines and gears for four new Moore - McCormack passenger/cargo vessels. Two of the vessels will be built by Sun Shipbuliding & Dry Dock Co., Chester, Pa., and two by Todd Shipyards Corp., Los Angeles Div., San Pedro, Calif.

"Hot" Award—The Fluor Corp., Ltd., has been awarded a contract in excess of $3.3 million by the Atomic Energy Commission to perform the purchasing and construction of a waste calcination system to be built at the National Reactor Testing Station, near Idaho Falls, Idaho. The system is a process to calcine and treat highly radioactive liquids.

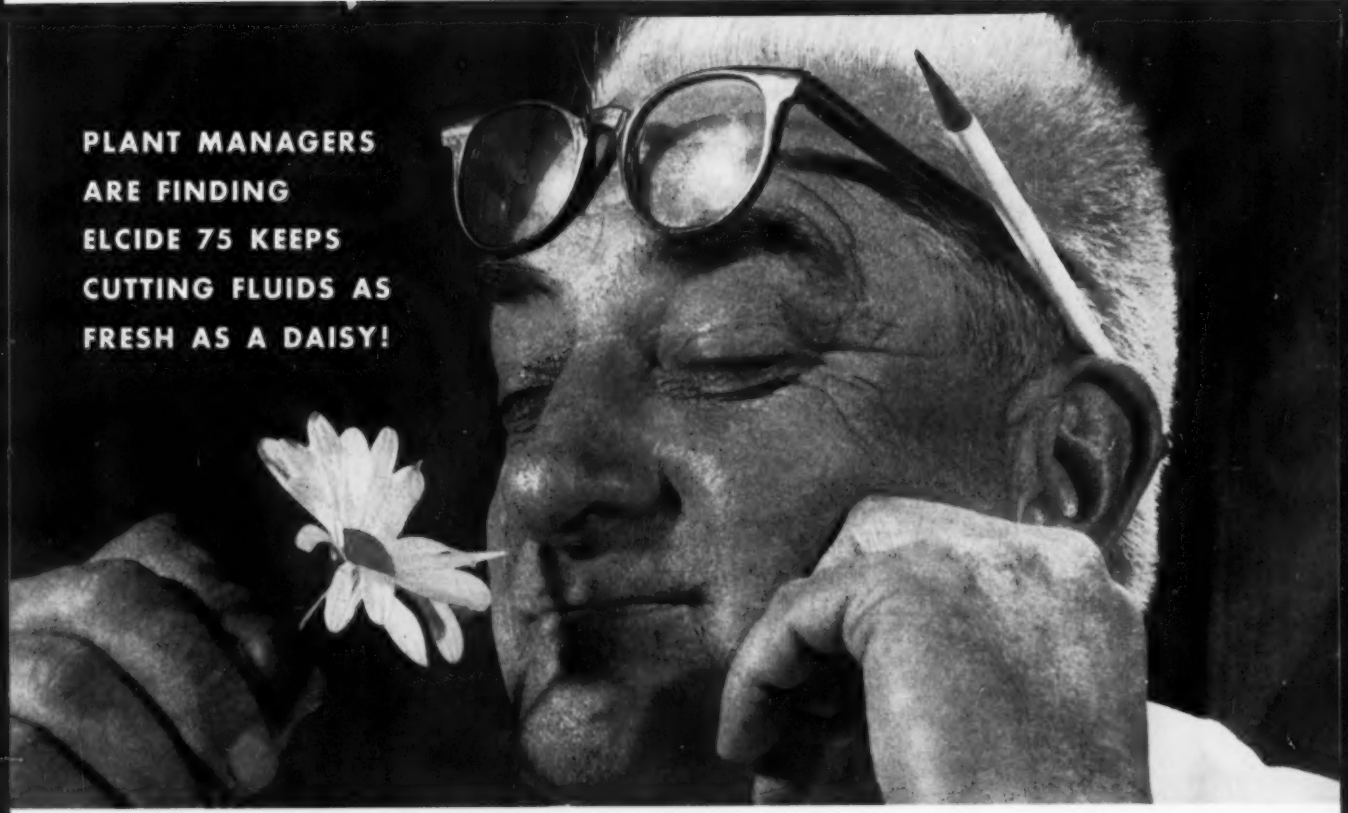
Widening Market—The American Instrument Co., Silver Spring, Md. has opened new sales offices in Murray Hill, N. J.; Long Island, N. Y.; Cleveland and Detroit. Representatives at the new offices will sell Aminco's entire line of precision instrument.

Change of Command—Effective Nov. 1, the responsibility for the operation of the Harrisburg, Pa., plant of the United States Steel Homes Div., U. S. Steel Corp., will be transferred to the American Bridge Div. Increasing volume of steel panels for Ambridge modular schools and other commercial requirements of a type handled by American Bridge make the transfer necessary.

Well Done—J. A. Anderson, vice president of General Motors and general manager of AC Spark Plug Div., has been awarded a "certificate of appreciation" by the Air Defense Command. The honor is "for valuable assistance in achieving better public understanding and appreciation of the Air Defense Command's mission and objectives."

Selling Swiss—The Philadelphia Gear Corp. and Maag Gear-Wheel Co. Ltd., Zurich, Switzerland, have an agreement making available in the U. S., Swiss-designed industrial precision gears. Philadelphia Gear is the exclusive agent for the manufacture and sale of Maag gear products in the U. S. and territories.

Names, Please—Five engineering undergraduates at Cornell University received all of the top awards this year in the annual mechanical and structural welded design competition sponsored by The James F. Lincoln Arc Welding Foundation, Cleveland. This is the first time in the 11-year history of the competition that students in one engineering school have made a clean sweep of the three top awards.



ELCIDE 75™ controls bacteria in soluble oil emulsions

...increases plant efficiency

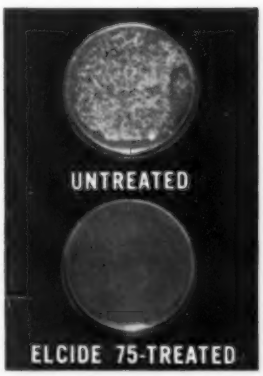
Elcide 75 extends the life of standard duty soluble oil emulsions. This longer emulsion life increases plant production and lowers operating costs.

Elcide 75 is a new bacterial inhibitor that controls a wider range of the harmful bacteria that cause emulsion breakdown, corrosion, and odor. This positive control means it is now possible to extend the life of standard duty emulsions up to 5½ times longer than ever before. This longer emulsion life decreases the down time previously spent for recharging, thereby increasing production and labor efficiency. Total soluble oil requirements are less, and waste-oil disposal becomes much less of a problem and expense.

Elcide 75 is safe to employees and machinery. Shop tests show it is nontoxic and safe, and it controls the bacteria that may cause acidic corrosion of machinery and staining of products.

Elcide 75 is more effective than commonly used single inhibitors because it is a combination of antibacterial agents, and includes a powerful new compound, one of the safest and most effective bacterial inhibitors used in medical surgery.

Bacterial plate counts prove the killing power of Elcide 75. The light areas shown in the photograph are harmful bacterial colonies that have built up in a normal untreated emulsion in 12 weeks. Notice the emulsion treated with Elcide 75 has been kept clean and clear.



Elcide 75 specifications: *Active Ingredients—Sodium Ethylmercuri Thiosalicylate (Thimerosal) and Sodium o-phenylphenate. Price per gallon—1 gallon polyethylene, $8.50, 5 gallon polyethylene, $8.00, 55 gallon stainless steel, $6.50. Sold only through selected distributors. For more information or to place your order, phone or write:*

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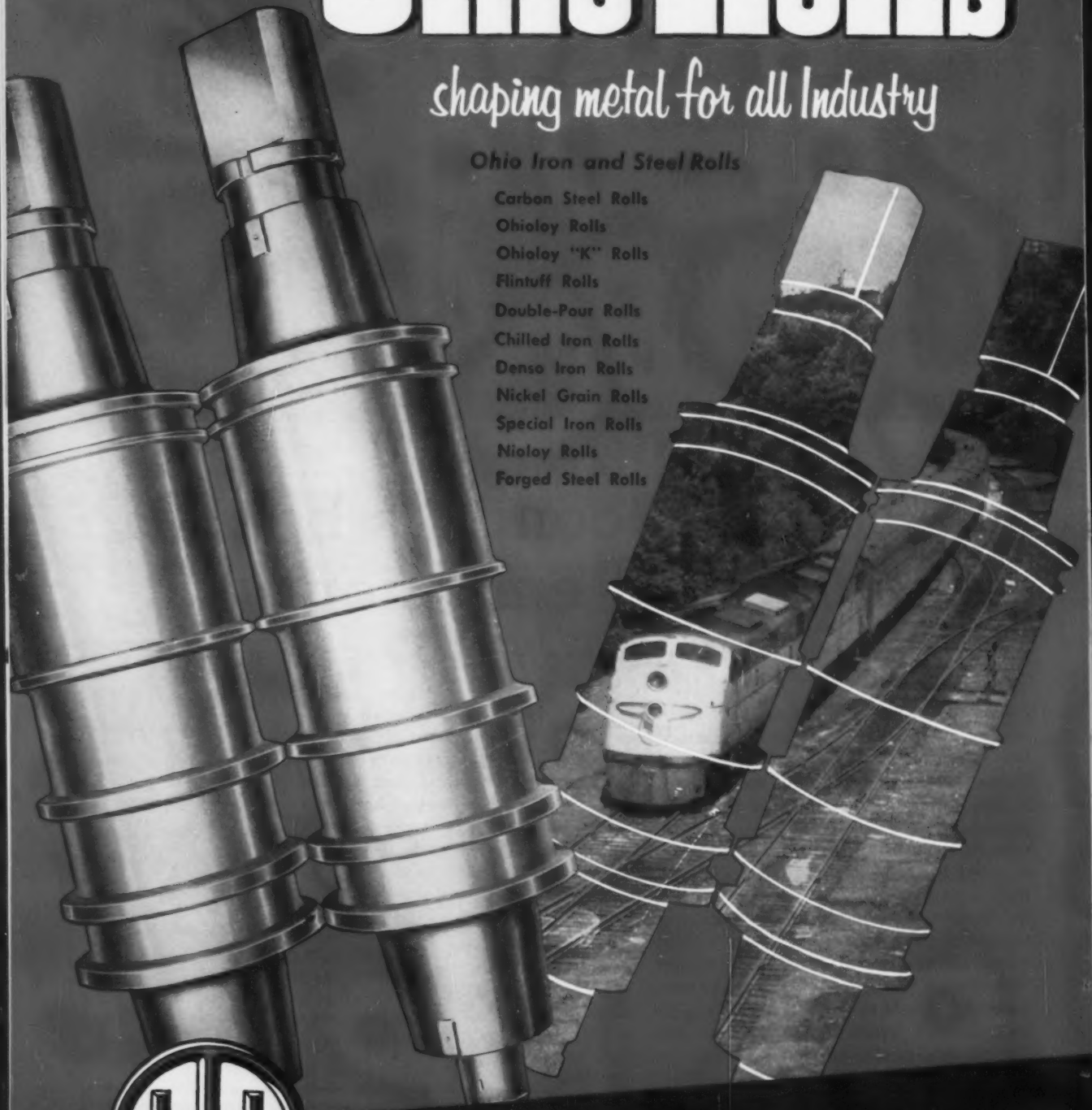

Ohio Iron and Steel Rolls

- Carbon Steel Rolls
- Ohioloy Rolls
- Ohioloy "K" Rolls
- Flintuff Rolls
- Double-Pour Rolls
- Chilled Iron Rolls
- Denso Iron Rolls
- Nickel Grain Rolls
- Special Iron Rolls
- Nioloy Rolls
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OH22

A. K. Alsaker, named chief engineer, engineering, Chicago Works, Delta-Star Electric Div., H. K. Porter Co., Inc.

H. B. Warner, appointed vice president, operations, McLouth Steel Corp, Detroit.; **L. H. Johnson,** appointed vice president, engineering; **G. W. Tischer,** appointed vice president, sales and services; **R. C. McLaughlin,** appointed vice president, public relations and asst. to the president.

J. E. Urquhart, appointed chairman of the board and chief executive officer, Woodward Iron Co., Woodward, Ala.; **W. R. Bond,** appointed president; **J. W. Hager,** appointed vice president, mining operations; **D. T. Turnbull,** appointed vice president and secretary; **W. R. Cottrell, Jr.,** appointed treasurer.

E. J. Thomas, named chairman of the board and **P. W. Litchfield,** becomes honorary chairman of the board, The Goodyear Tire & Rubber Co., Akron, O. **Russell DeYoung,** becomes president; **P. E. H. Leroy,** elected vice chairman of the board; **Sam DuPree,** vice president, production.

C. V. Blackburn, appointed executive vice president, Stran-Steel Corp., a division of National Steel Corp.; **J. G. Skaaren,** named general sales manager; **G. R. Thomas,** named manager, building sales; **Max Luft,** named marketing services manager; **Lamar Heine,** named manager, customer service; **R. R. Scrase,** named executive asst. to the executive vice president; **J. H. Murphy,** manager, Product Planning and Coordinating Dept.

G. R. Sullivan, elected vice president, A. P. Green Fire Brick Co., Mexico, Mo.

W. G. Dahl, appointed vice president, sales, Latrobe Steel Co., Latrobe.

Brig. Gen. Monro MacCloskey, USAF (ret.), appointed asst. to the president, Crosley Div., Avco Mfg. Corp.

H. Y. Mageoch, named director, engineering and research, Delta-Star Electric Div., H. K. Porter Co., Inc., Chicago headquarters.

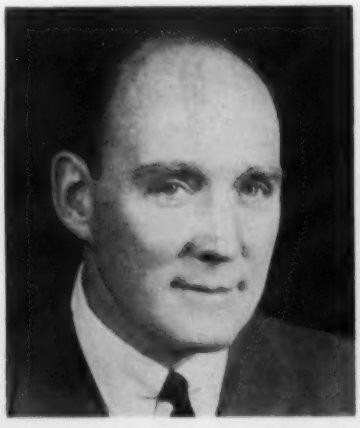
J. L. Daniell, named executive asst. to the president, Jessop Steel Co. of Washington, Pa.

E. K. Foss, appointed operating asst. to the executive vice president, Copperweld Steel Co.

E. V. Pierce, appointed sales manager, Kenosha Div., The American Brass Co., Kenosha, Wis.

Ernest Willison, appointed engineering manager, Engineering Works Div., Dravo Corp., Pitts-

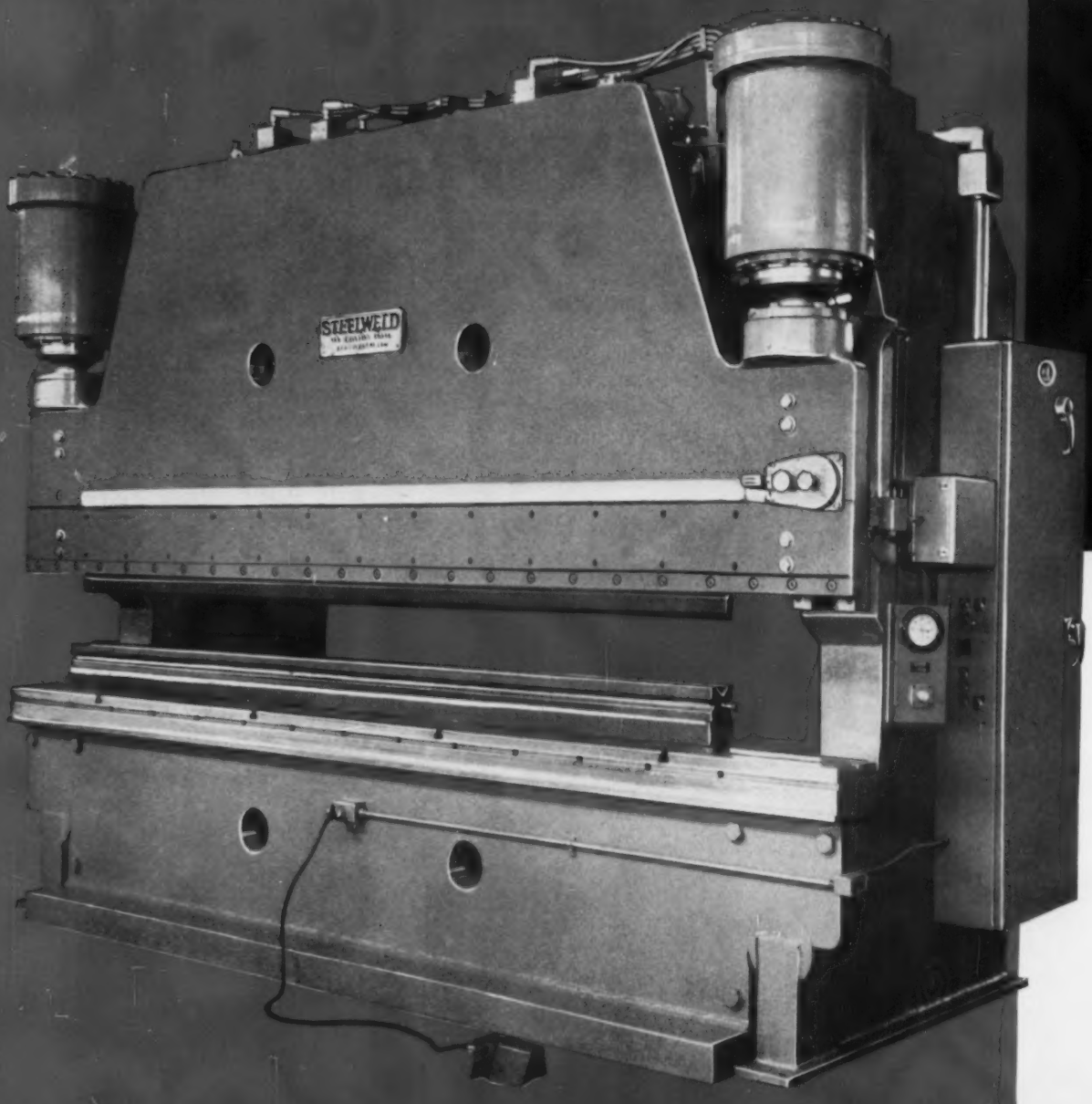
A. P. Gagnebin, elected vice president, The International Nickel Co., Inc.



J. M. Weldon, elected asst. vice president, The International Nickel Co., Inc.

P. W. Scott, elected a group vice president, The Budd Co., Philadelphia.

Introducing a



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NEW LINE of

STEELWELD HYDRAULIC PRESS BRAKES

Capacities to 2000 Tons

- **Positive overload protection.**
- **Constant power during entire stroke.**
- **Ram reversible at any point.**
- **Stroke quickly adjusted for any length.**
- **Fast ram approach and return—slow-speed pressing.**
- **Operating pressure simply adjusted.**
- **Accurate ram level automatically maintained.**
- **Ram easily tapered.**
- **Simple, safe to operate.**

CLEVELAND CRANE is proud to present its completely new series of Steelweld Hydraulic Press Brakes for bending mild steel from 10 gauge to 2 inches and in lengths to 30 feet.

Heavily built and of finest quality throughout, the machines are of the most advanced design with all features found desirable for ease of operation, maximum production and outstanding performance.

Steelweld hydraulically operated brakes are versatile machines capable of handling a wide variety of operations. They are ideal for jobbing shops, as well as for mass-production work. They work to close tolerances and have ample speed.

The new line of hydraulic brakes supplements the Steelweld line of mechanical press brakes, which Cleveland Crane has been building for more than 25 years, but does not supplant it. Each type of machine has its advantages and careful consideration must be given to the specific application to determine the type and size machine most suitable.

We urge you to get the facts on these new machines that have so much to offer you. Our sales engineers will be glad to give you the details. Or write for our new catalog below.

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QUANTITY PRODUCTION OF GREY IRON CASTINGS

ONE OF THE NATION'S LARGEST AND MOST MODERN PRODUCTION FOUNDRIES

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TEMP-R-TAPE®
pressure-sensitive TEFLON* tapes for Class H & C insulation – for chemical resistant or non-stick facing

Easy-to-apply, just press in place. Temp-R-Tapes provide dielectric strength up to 2750 v/m, low power factor, a −100°F to 500°F (−75°C to 250°C) temperature range and a slippery, chemical resistant surface. "Called out" for many electrical and mechanical applications. 1/4" to 12" wide, .002" to .013" thick. From stock.
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burgh; **D. A. Booth,** promoted to asst. engineering manager.

C. W. Janosek, appointed works manager, Cleveland Welding Div., American Machine & Foundry Co., Cleveland; **Charles Bill, Jr.,** appointed administrative asst. to the general manager.

G. A. Drew, appointed general manager, The Schrader Div., Scovill Mfg. Co., Inc.

R. H. Merriman, named maager, Air Reduction Sales Co.'s Buffalo district.

T. R. Legler, appointed superintendent, construction, The Youngstown Sheet & Tube Co.

S. T. Williams, appointed president and general manager, Scovill Mfg Co., Inc.

J. E. Partlow, appointed asst. general sales manager, General Refractories Co., Philadelphia.

G. L. Leiendecker, appointed district sales manager for United Air Lines at Seattle.

N. G. Spoth, named manager, Kolcast Industries, Cleveland, a division of Thompson Products, Inc.

A. R. Blyth, named manager, Metal Lath Dept., Ceco Steel Products Corp.

Edward Bachorik, appointed general sales manager, Allied Control Co., Inc., New York.

S. W. Gearhart, Jr., promoted to chief metallurgist, Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.

G. C. Hall, named manager, industrial distributor sales, Rollway Bearing Co., Inc., Syracuse, N. Y.

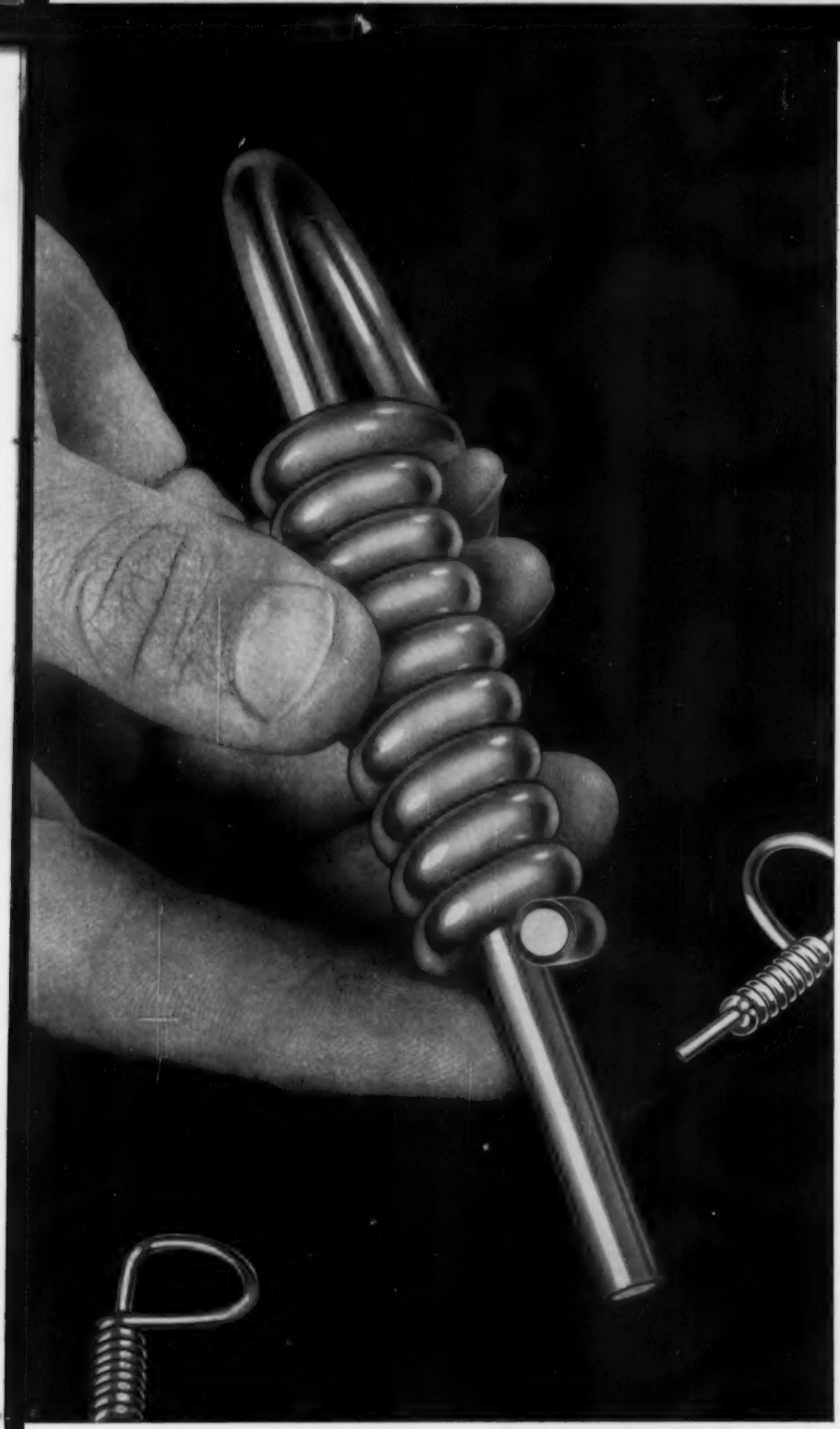
R. C. Flood, appointed a vice president, Scovill Mfg. Co., Inc.

R. W. Dixon, appointed manager, Electric Service Works, Philadelphia, Delta-Star Electric Div., H. K. Porter Co., Inc.

W. H. Clemons, named sales engineer, C. I. Hayes, Inc., Cranston, R. I.

J. M. Miller, named director, engineering, Missile Section, Bendix Aviation Corp.

Following men have been appointed to new positions in the Armco Div., Armco Steel Corp., Middletown, O.: **T. W. Karchner,** assistant purchasing agent; **J. R. Bevis,** clerical methods coordinator;



Get as "rough" as you want with

Copperply® wire!

Even the most severe usages known cause no measurable deterioration of the copper coating on Copperply Wire. This is both field and laboratory proved!

Shown here, for example, are standard wrap test specimens. Despite this extreme bending, neither microscopic examination nor ferroxyl testing show any hint of coating fracture or porosity.

You may well ask why. For one thing, the National-Standard electroplating process provides a homogeneous, high density coating . . . and, regardless of wire size, the maximum variation in copper thickness is less than 1% of diameter!

Copperply wire, offering you unmatched uniformity and service life, is available in the popular ASTM 30% and 40% conductivity grades. In addition, the precise control of the process permits the deposition of lighter coatings with the same degree of concentricity for varied electrical, electronic and mechanical applications where less copper is required. Copperply wire can be custom-produced to the copper thickness to give you the exact degree of conductivity or corrosion resistance required.

Write National-Standard, Niles, Michigan, for comprehensive Data Bulletin 202.

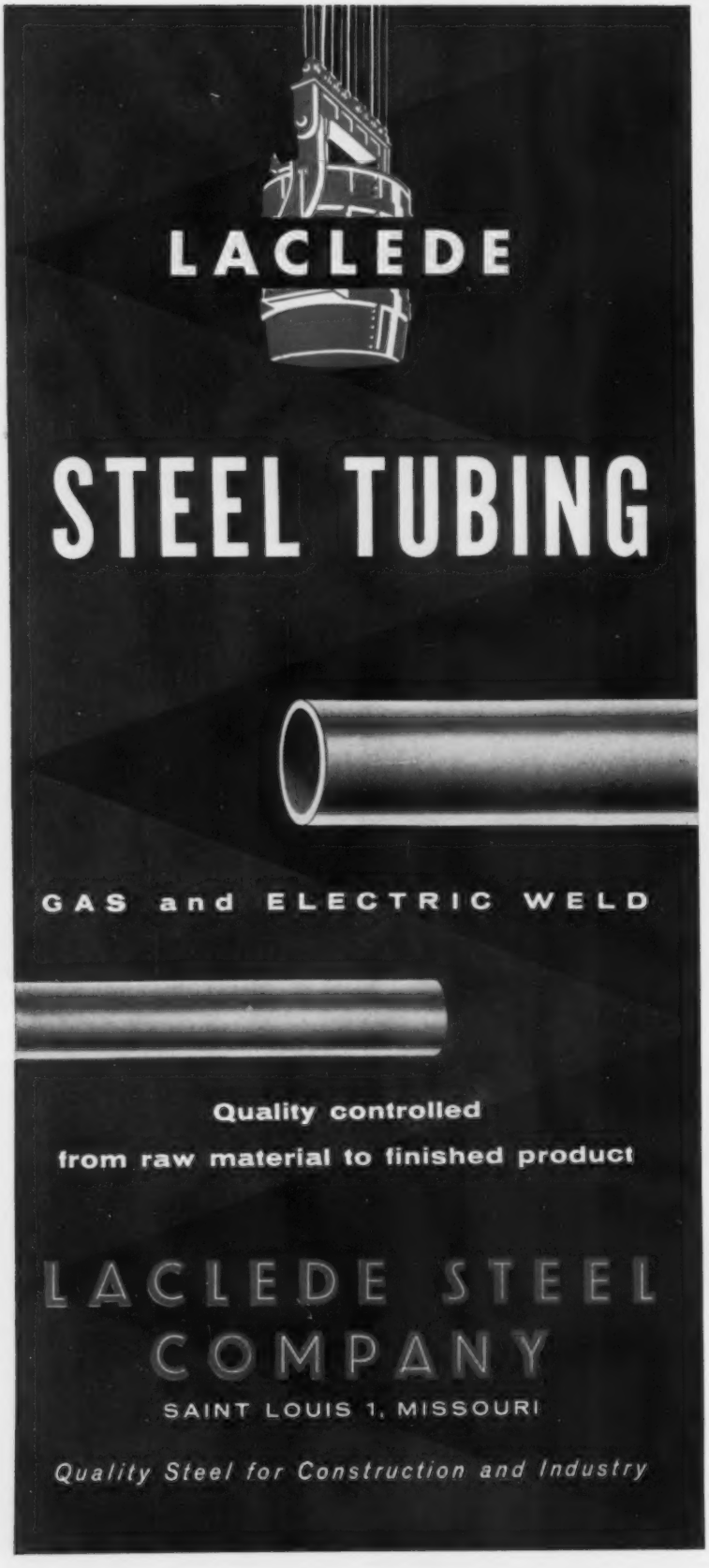
NATIONAL NS NATIONAL-STANDARD Company **STANDARD**

NATIONAL-STANDARD, Niles, Mich.; *tire wire, stainless, music spring and plated wires, flat and tubular braid and wire cord*

WORCESTER WIRE WORKS, Worcester, Mass.; *music spring, stainless and plated wires, high and low carbon specialties* • **REYNOLDS WIRE**, Dixon, Ill.; *industrial wire cloth*

WAGNER LITHO MACHINERY, Secaucus, N. J.; *metal decorating equipment* • **ATHENIA STEEL**, Clifton, N. J.; *flat, high carbon spring steels*

CROSS PERFORATED METALS, Carbondale, Pa.; *industrial, commercial, and decorative perforated metals*



J. A. Mahany, supervisor, accounting and statistics; **T. W. Bailey,** supervisor, accounts payable and receivable; and **E. F. McKnight,** senior accountant, statistics.

F. W. Ellis, appointed foundry sales representative, Dayton, O., area, Climax Molybedenum Co., a division of American Metal Climax, Inc.

J. H. Phillips, appointed sales representative, Toledo area, Universal-Cyclops Steel Corp., Cleveland district sales office.

August Nuut, appointed principal engineer, transistor circuitry, Data-Tape Div., Consolidated Electrodynamics Corp., Pasadena, Calif.

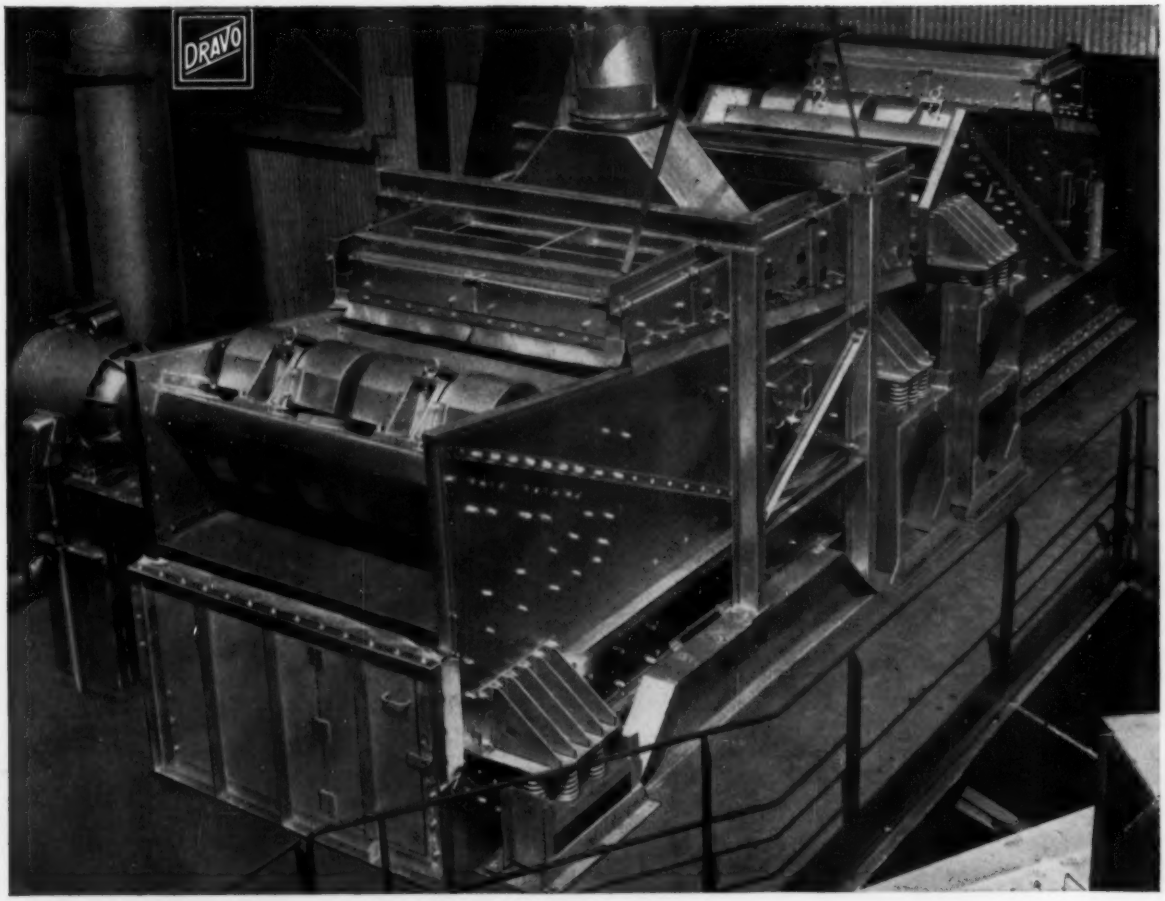
J. T. O'Rourke, appointed asst. vice president, Anaconda - Jurden Associate, Inc.

D. B. Hooser, appointed Southern district manager, Cleveland Tramrail Div., The Cleveland Crane & Engineering Co., Wickliffe, O.

R. W. Young, promoted to asst. to the manager, Middletown Fabricating Plant, Armco Steel Corp.

K. Herron, appointed Cleveland district sales manager, The Alloys & Chemical Mfg. Co., Inc., Cleveland.

J. B. Hill, appointed technical assistant, blast furnace operations, Steel Div., Bethlehem Steel Co., Bethlehem, Pa.; **Edward Ball,** appointed superintendent, blast furnaces, Lackawanna, N. Y. plant; **C. W. Felton, Jr.,** named asst. blast furnace superintendent.



Dravo-Schenck improves handling of hot or abrasive materials

At a recently completed sintering plant, this new type of screen and conveyor moves hot sinter material by a unique principle of high speed mechanical vibration.

This method, now applied to a complete line of feeders, screens and conveyors, minimizes equipment wear on difficult materials handling jobs. These units are now being manufactured by Dravo under license arrangement with Carl Schenck Co. of Germany, Europe's leading maker of such machinery.

Rugged Dravo-Schenck "vibro-conveying" performs well with a variety of materials such as iron and other metallic ores, sinter, chemicals, cement, stone and coal. For more information on Dravo-Schenck "vibro-conveying" equipment or other products and services listed below, write DRAVO CORPORATION, PITTSBURGH 25, PA.

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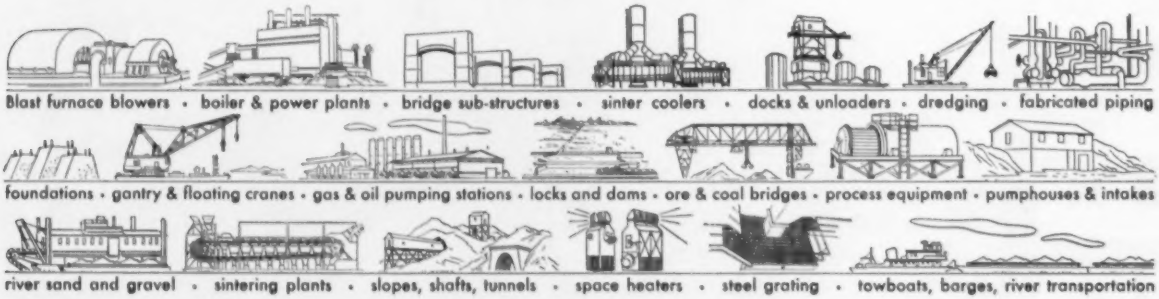
Blast furnace blowers • boiler & power plants • bridge sub-structures • sinter coolers • docks & unloaders • dredging • fabricated piping
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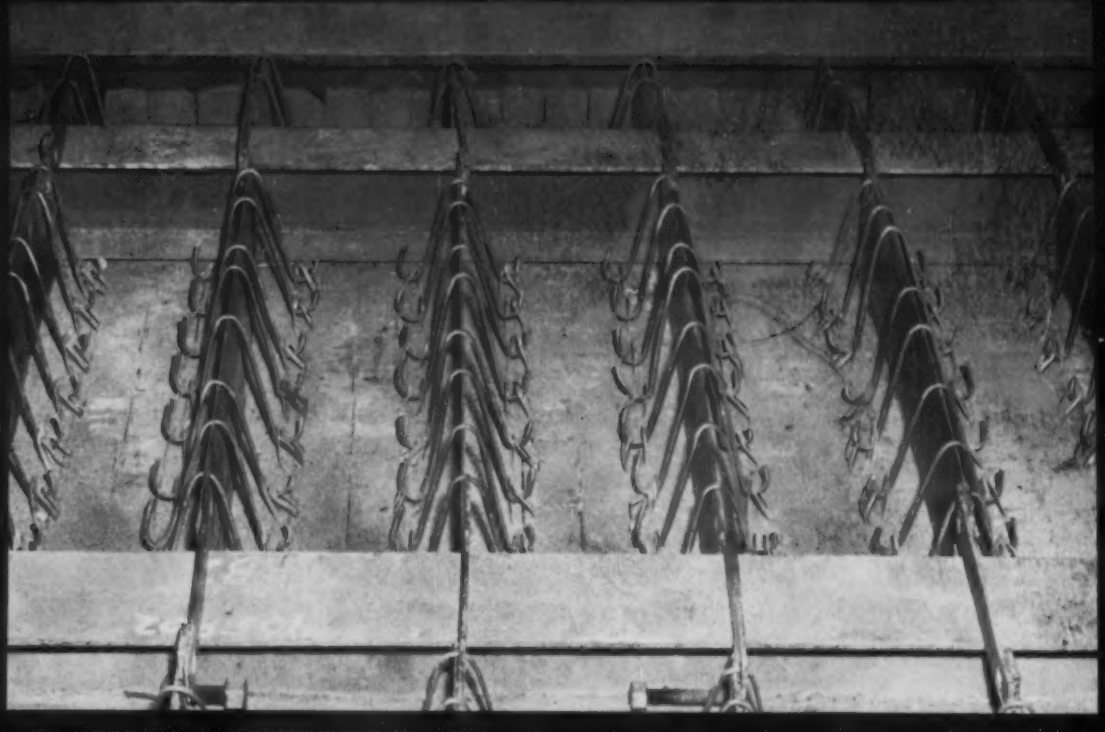

Steelmaking—

GREFCO'S
STEELKLAD 40-EE

the roof of the "All-Basic" open hearth furnaces now breaking production records.

• This year, improved operating techniques and greater use of oxygen in open hearth furnaces have yielded unprecedented increases in production. Two years ago, a production rate of 25 ingot tons per hour was considered satisfactory for large open hearths. Today, many of these same furnaces produce 40 tons per hour, and rates up to 50 tons per hour are deemed entirely possible.

These improvements, however, place such increased stress on roof refractories that silica brick cannot endure. Only "All-Basic" furnaces can withstand these operations satisfactorily.

"STEELKLAD 40-EE", the first internally plated brick, has made possible the phenomenal growth in the number of "All-Basic" furnaces. In early 1956, only two "All-Basic" furnaces existed in North America. By January of this year, there were 15. At present, over 50 furnaces are or will shortly be of "All-Basic" construction. And of this total, more than 80% have roofs of "STEELKLAD 40-EE" refractory brick.

• *GREFCO leads the Refractories Industry in "All-Basic" furnaces, with radically new "EE" and "Tab" brick.*

• *Simplified basic constructions, using "Tab" and "EE", drastically cut "All-Basic" furnace costs.*

• *GREFCO technical and sales service personnel are ready to help you build such furnaces, whether of sprung, suspended, or combination roof construction.*

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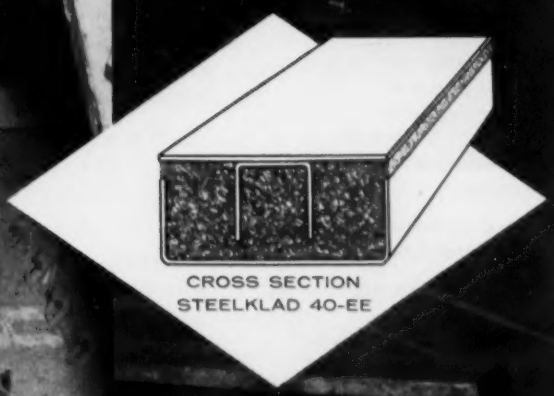

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New Power Source Broadens Use For CO_2 Welding

By **H. J. Bichsel, E. J. Steinert** and **E. R. Gamberg**—Welding Dept., Westinghouse Electric Corp., Buffalo

Low cost was once the chief attribute of CO_2 welding.

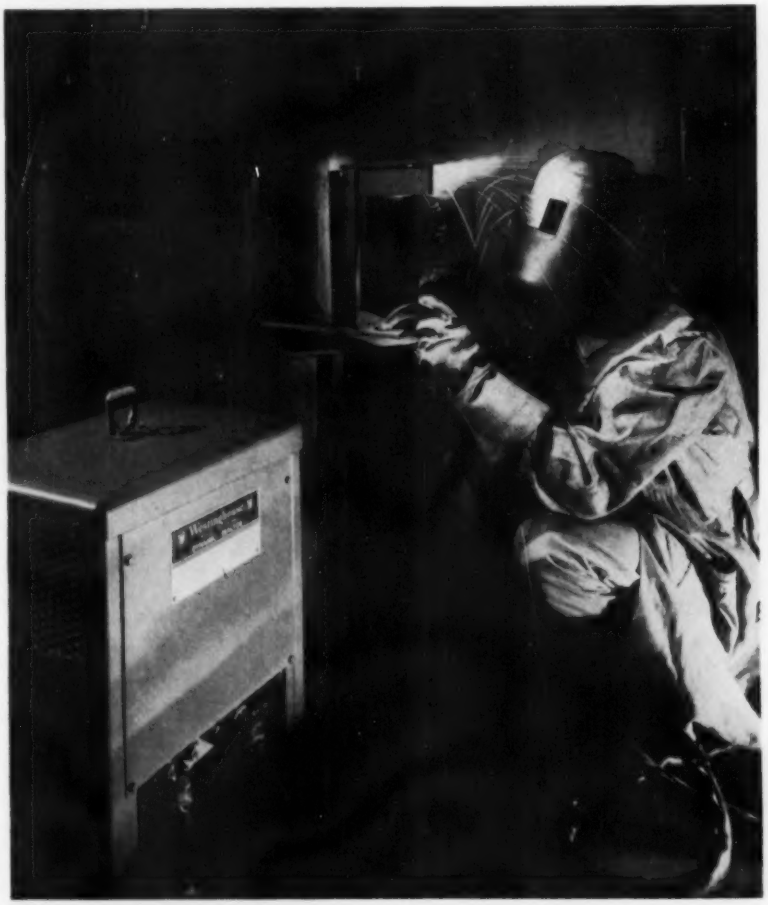
A new type of power supply unit adds another dimension—versatility.

Now you can use it just about anywhere the gun will go.

▪ Automatic, all-position CO_2 welding is here. What's more, it can now be used on light gages as well as on heavier metal.

Back of this major advance in welding technology is a new type of power supply equipment developed by Westinghouse. The dynamic reactor, as it's called, limits the rate of weld current. This permits use of lower weld currents and transfer of weld metal in droplet form.

In turn, lower currents and droplet transfer permit the use of larger and less expensive wire sizes, effective depth control of weld penetration and, for the first time, use of the CO_2 process for vertical and overhead welding.

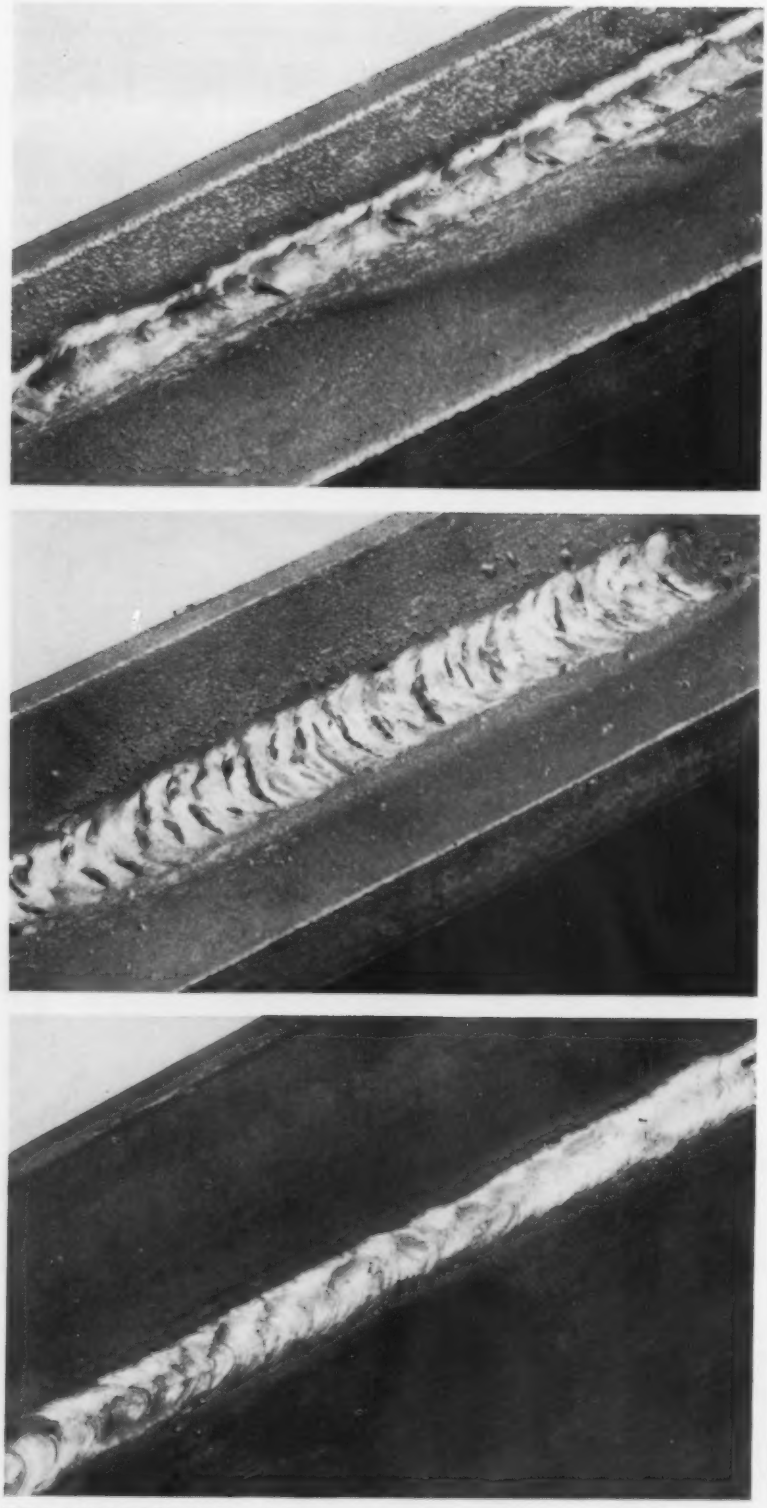


COMPACT UNIT: As an auxiliary to existing power sources, dynamic reactor permits using CO_2 process on vertical and overhead welds.

How It Works—Until now, both the CO_2 and argon processes were limited to horizontal butt and fillet welds. This was because high minimum currents were needed to create a spray-type transfer of metal from electrode to work. If less current is used transfer of metal ceases to be a spray and takes place in large drops.

These drops actually short circuit the arc. When a constant potential type of machine is used the short circut current can rise almost instantaneously to about 7 or 8 times the operating value. Such high current values create magnetic forces which tend to break up the droplets and throw them out of the arc region as spatter.

By designing a power supply with more droop, this short circuit current is held to a lower value. It allows the drop to be melted off and transferred to the pool on the workpiece and not expelled as undesirable spatter. The value of inductance is selected to produce rapid and repetitive droplet transfer at arc voltages that average from 17 to 24 v. The actual value depends on wire diameter and di-



FOR ANY POSITION: Ability of the new dynamic reactor to adapt CO_2 process for all-position welding is demonstrated by an overhead weld (upper photo), weld made vertically downward (center), and one made vertically upward (lower photo). All were made with 1/16-in. MS-21 wire on ⅛-in. mild steel at 130 amp and 20 arc volts.

rect current ampere setting of the welding power source.

Two-Thirds Lower — This new power supply makes it possible to reduce minimum current in both the CO_2 and argon processes by a factor of more than 2 to 1 on all wire diameters. For example, the minimum current on 1/16 in. diam wire can be reduced from 300 amp to about 100 amp.

Lower currents not only make possible all-position welding; they also extend the range of minimum metal thickness which can be welded. Formerly, the CO_2 process had deep penetration; the minimum thickness which could be butt welded was ⅛ in. on a copper backup plate to absorb heat. Even then, the weld tended to stick to the backup bars. Now butt welds can be made on 0.040 in. material using the same electrode diameter.

Broad Scope — Pilot equipment already operating—mainly in the automotive industry — is making automatic and semiautomatic welds on mild steel. But the process is equally applicable to stainless steel, aluminum, and nonferrous alloys.

A typical automotive use is on a muffler-to-tailpipe assembly made of 0.050 in. thick mild steel. The lap fillet weld is made automatically at 60 ipm using 0.040 in. diam MS-21 wire at 100 amp and 20½ arc volts. Weld quality is far better than required, yet welding cost is $.0061 per piece for direct labor and material.

This weld is practically impossible to make, in production quantities, with any other arc welding process. Thus the new process will do jobs which have been reserved for gas welding. It's expected to reach into all types of auto body and general sheetmetal work. It may even extend to some work now being done by resistance welding.

Big Wire Savings—In present applications, savings in wire costs more than offset the usually higher welding costs that result when current is decreased. Wire at least one

size larger can be used with little or no change in current, voltage, and travel speed. Possible savings range from 17¢ per lb when changing from 3/64 to 1/16 in. aluminum wire in semiautomatic applications, to a saving of 1 to 1-½¢ per lb when changing from 1/16 to 3/32 in. mild steel wire in high-speed, high-volume automatic applications.

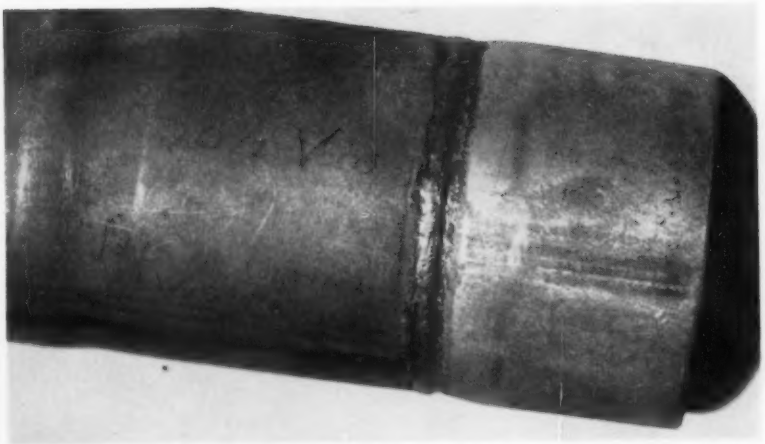
Previously, the MIG and CO_2 processes have used wires from 0.040 to 0.091 in. at currents from 200 to 600 amp. Now wires from 0.040 to ⅛ in. diam can be used at currents ranging from 75 to 800 amp.

Quick Switch—Wire 1/16 in. in diam will probably be most popular for hand-gun use. By means of the wire feed control in the gun, currents as low as 100 amp can be used for welding light gage metals and for vertical and overhead welding. A flick of a finger on the gun dial makes it possible to increase the current setting to 450 amp. This is equivalent to the current used on the largest size commercially used manual flux coated stick electrodes (5/16 in. diam).

The accompanying photos show examples of vertical up, vertical down, and overhead welds made on ⅛-in. mild steel. They were made at 130 amp and 20 v, with 1/16 in. diam MS-21 wire. Direct labor and material costs for making such welds is less than one half the cost of similar welds made with stick electrode, including stick electrode work cleaning costs and electrode changing time.

High Quality, Too—Results in the laboratory and the field indicate the improved CO_2 process makes welds that are equal in quality to MIG process welds and better than most manual electrode welds.

Dozens of 0.505 in. all-weld-metal specimens made in the Westinghouse commercial laboratory confirm that multipass welds can be made consistently without porosity and with excellent physical properties. They developed 73,400 psi tensile strength, 59,000 psi yield strength, 30.85 pct elongation in 2 in., and 63.62 pct reduction of area. Most pull specimens result in a cup-cone fracture indicative of high quality weld metal.



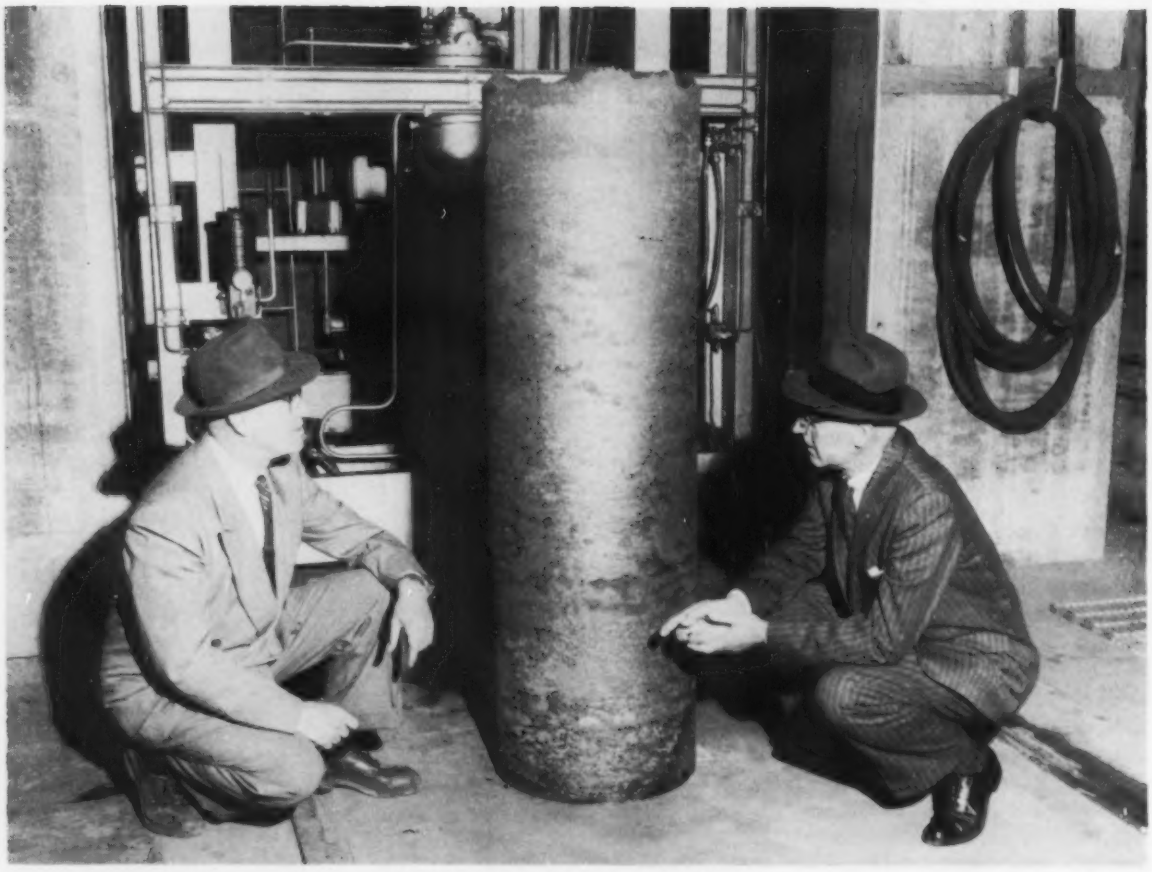
PRODUCTION WELD: Lap fillet weld on automotive muffler-to-tailpipe assembly is made automatically at 60 ipm with 0.040-in. diam MS-21 wire at 100 amp and 20½ arc volts. Material is 0.050-in. mild steel

QUALITY TEST: Cup-cone fracture typical of weld metal laid down by reactor-controlled CO_2 process indicates high quality it effects.

Two Sizes — Dynamic reactors now in production at Westinghouse are of two sizes. The smaller—dual-rated at 150/300 amp, 100-pct duty cycle — is mainly for nominal gage materials in semiautomatic setups, and for semiautomatic or full-automatic welding of thin gages. The larger unit—dual-rated at 300/600 amp, 100-pct duty cycle—is best suited for high-speed automatic or high-current semiautomatic setups.

They can be used with any standard constant-potential, constant-wire-speed system of metallic-inert gas welding.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.



QUALITY MELT: Timken's H. Walther, Supt. of Melting (left), and J. E. Fick, V. P., look over finished ingot.

Timken Goes to Vacuum Melting

Demand is growing for cleaner, sounder steel, in bearings as well as for airborne weapons.

Consumable electrode vacuum arc melting is a good way to fill the need.

▪ The Steel and Tube Div., Timken Roller Bearing Co., has installed its first consumable electrode vacuum arc furnace. The new vacuum furnace, which cost $500,000, will produce about 200 tons of high quality alloy steel a month. The metal will go into high stress bearings, making possible longer bearing life. It'll also be suitable for vital aircraft, rocket and missile parts.

Consumable electrodes for the new vacuum arc unit are forged from ingots melted in Timken's air melt electric furnaces. Electrodes presently being made are 14 in. in diam, about 11½ ft long and weigh about 6100 lbs. This will make an ingot 20 in. in diam, 5½ ft long and weighing about 5800 lbs. Maximum size ingot is 24 in. in diam with a weight of 5 tons.

After forging, the ends are squared and an adapter is welded to one end. The entire surface of the electrode is ground to remove any scale formed during forging.

Started Manually—The finished electrode is placed under the furnace on a special loading car. The adapter is fastened to a stinger rod that runs through the center of the furnace to furnish the electric power needed for melting.

A water-cooled copper mold is fitted over the positioned electrode and fastened airtight to the bottom of the furnace. Then a disk cut from the end of the electrode is placed in the bottom of the mold to act as a starting pad.

With the furnace sealed, pumpdown is started to create the vacuum. Lowering the electrode to the

pad by manual controls, the operator strikes an arc. A system of mirrors and prisms lets the operator see the pattern of the arc.

Melt is Automatic — Once the arc is struck, controls are switched to automatic. The arc melts the end of the electrode and metal drips to the bottom of the mold. Since the jacket of the mold is water-cooled the metal solidifies rapidly. Pumps draw off gases released from the molten metal.

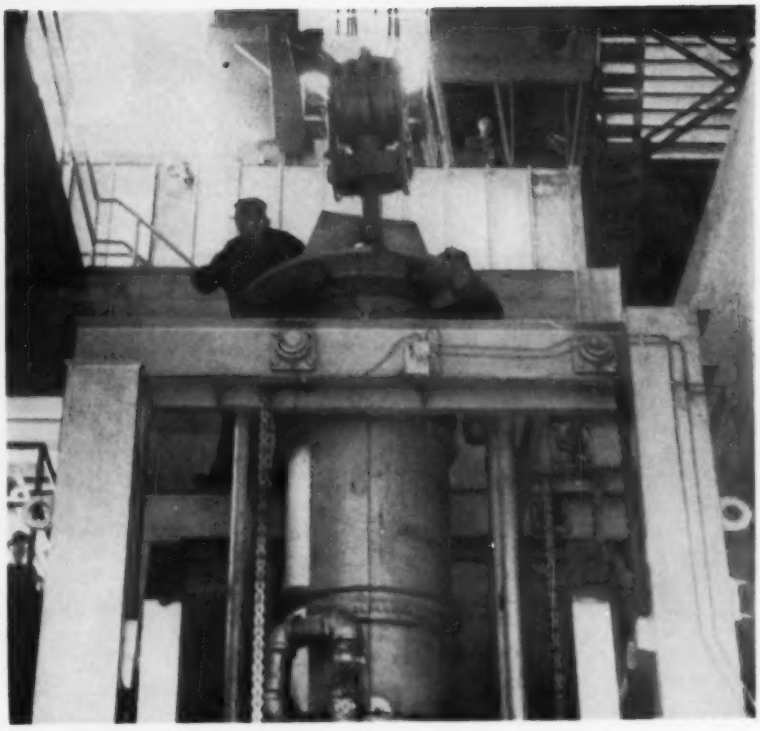
When the electrode is nearly consumed, controls are returned to manual, the melt is finished and current is turned off. Air bled into the furnace breaks the vacuum and the mold is released from the furnace. In the last step the mold is stripped from the ingot and the mold thoroughly cleaned before the entire process is repeated.

A combination of four diffusion pumps and two mechanical blower-type pumps provided excess vacuum capacity over a range of from one micron to atmospheric pressure.

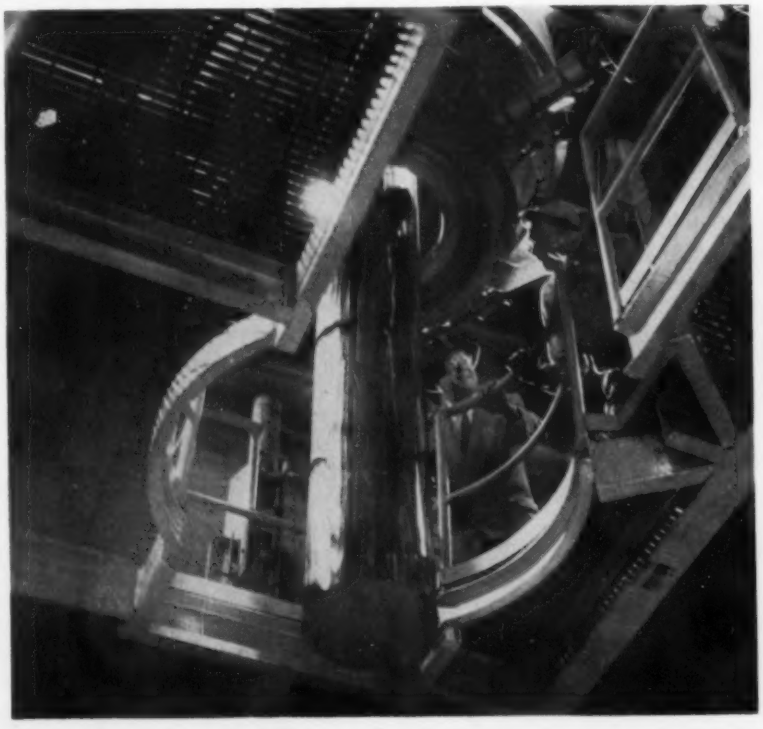
Complex System—Controls and recording instruments are automatic. For example, a six-point recorder chart continuously records voltage, current and pressure in any of four different pressure ranges: 0 to 10 microns, 0 to 1000 microns, 0 to 10,000 microns and 0 to 100,000 microns. The chart provides a running total of melting variables for better control, more uniformity and a better end product.

Flow meters on a control panel show the amount of water in various parts of the furnace. If the flow drops below a preset figure a warning horn sounds.

A crew of two men operate the furnace, with a craneman to help load and unload the ingots and electrodes. Four to five hours are needed to melt ingots of the size now being made. The structure housing the furnace stands 42 ft high in a rectangular chamber measuring 12 x 24 ft. A separate building houses the silicon-type rectifiers and buss ducts that conduct electrical current to the stinger rod.



STRIPPING MOLD: Last step is the stripping of the ingot mold from the ingot. Mold is thoroughly cleaned before process is repeated.



SETTING UP ELECTRODE: After electrode is placed in bottom of furnace, water-cooled mold will be fitted to bottom with airtight joint.

PROVES PRACTICAL: Oxy-gasoline is used on all kinds of jobs at Buckley Welding Co., Keene, N. H.

Oxy-Gasoline Cutting Torch Works Fast, Lowers Cost

A cubic foot of gasoline vapor has far greater heating value than any fuel known.

Harnessed by a safe, reliable torch, it becomes a fast and economical way to cut metal.

By William Czygan—
Materials Editor

▪ For years, welding engineers have been looking at liquid fuels as a possible means of flame-cutting metal. The missing link has been the torch to handle such fuels.

From all reports, the need has been fulfilled in a new torch developed by Worcester Taper Pin Co., Worcester, Mass. Called the Browning U-15B after its inventor, James A. Browning, the new torch operates on a cheap, abundant source of high heat—common gasoline, coupled with oxygen.

Some two years of study and practical trials at MIT's Dept. of Metallurgy show the device is fast, clean cutting and reliable. It whacks through ½-in. steel at upwards of 30 ipm on just 12 cc of gasoline and 48 liters of oxygen (6 liters of it for low-pressure preheat).

Richness Controls Speed—Cutting speed goes up as the ratio of gasoline to oxygen is increased. The richer the flame the faster the cut, the greater the consumption of gasoline and the less oxygen is needed. Oxygen is used more effectively in burning gasoline instead of steel.

The oxy-gasoline flame leaves little or no slag. But where a slag lip does form, it's very friable and easy to remove without chipping or grinding. This is because a high water vapor concentration in the flame makes the slag porous.

Another factor that reduces slag, and one which partly accounts for cutting speed, is that not all of the liquid fuel is spent in the preheat flame. The high-pressure cutting oxygen burns part of the gasoline right through the kerf.

Hardening of the steel being cut is rare. In the vast majority of cases the flame-cut metal machines easily, without undue stress on equipment.

Offers Big Savings—The main attribute of the new torch is economic. Two gallons of gasoline at about 60¢ reportedly do the same amount of work as a 240 cu ft cylinder of acetylene costing around $7. If a shop uses three cylinders of oxygen (at $5 each) to one of acetylene per day, operating cost is about $22. With 2 gal of gasoline and the same amount of oxygen, the figure drops to $15.60.

Thus, oxy-gasoline fuel costs are 30 pct lower, for an annual saving (based on 250 working days) of $1600 per unit.

Further savings stem from reduced labor, storage and handling costs. The entire outfit (including tank, torch and hoses) weighs less than 30 lb completely filled. Since what little slag may form is easily brushed or knocked off, cleaning is nominal.

Simple and Safe—Operation of the new oxy-gasoline torch is simple for anyone used to acetylene cutting, heating and brazing. The operator has only to learn the special techniques of lighting, adjusting and shutoff.

That the Browning torch has proved safe is amply attested by Underwriters Laboratories and Factory Mutual approval. The unit has also passed the strict tests of the New York City Board of Standards and Appeals, Philadelphia Fire Commission, California Fire Marshall and others.

Good results are obtained with automotive fuel from the nearest gasoline pump. For work in confined areas, however, nonleaded white gasoline or naphtha in the rubber-solvent range are recommended. These can be bought economically from bulk stations.

In addition to the Browning U-15B manual torch, there's a type U-15BM for use on most portable cutting machines. Three cutting tips are supplied with each type: one is for vertical cutting depths up to 2 in., another is for greater depths, and the third is regarded as a destructive tip.

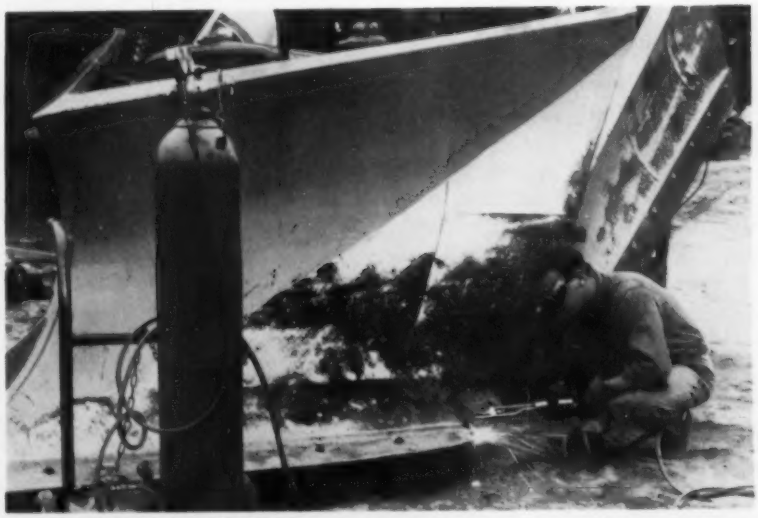
Speed Varies With Mixture

Gasoline Flow Rate, per minute	Preheat Oxygen Flow Rate, liters per minute	Cutting Oxygen Flow Rate, liters per minute	Cutting Speed, ipm*
12.0	6.18	42.2	30.7
12.0	9.6	42.2	24.8
12.0	12.0	42.2	19.2
16.1	19.3	41.7	13.7
16.1	16.0	41.7	16.2
16.1	11.9	41.7	22.5
16.1	7.1	41.7	26.5

* Average of three trials on ½-in. steel plate with 50 psi (gage) oxygen line pressure and 28 psi (gage) gasoline tank pressure.

How the Hydrocarbons Compare

	Acetylene	Hydrogen	Nat. Gas	Propane	Gasoline
Hydrogen, pct	7.7	100	25	18.2	15.8
Molecular weight	26.04	2.016	16.04	44.09	114.20
Btu per lb (net)	20,700	51,600	21,600	19,900	19,300
Btu per cu ft gas	1500	290	965	2445	6140 (vapor)
Relative Flame Velocity	1.0	1.2	0.3	0.3	0.3
Maximum Flame Temperature, °F	5500	5000	4900	5000	5100
Weight, lb					
100 cu ft gas	7.25	0.56	4.47	12.28	31.8
1 gal liquid	—	—	—	4.24	6.15



HIGHLY PORTABLE: Full tank, torch and hoses weigh less than 30 lb, making the oxy-gasoline system a natural for transport to jobs in the field.

EASY TRIMMING: Abrasive disk in simple setup trims flash from a curved, finished plastic part.

Tool Builder Takes on Plastics

While its regular line is machine tools, one firm finds a ready market for reinforced plastic parts.

Its new plastics department serves on a contract basis.

▪ Seeing the need for plastic parts, a machine tool firm set up its own department to make plastic parts. It's a decision based on many years of using parts supplied from outside sources on its products.

Well aware of the advantages of plastic parts for many applications, Gisholt Machine Co., Madison, Wis., entered the plastics field, not only to produce parts for its own use, but to supply other manufacturers on a contract basis.

Full-Time Outfit — Now in full operation, the new department is supplying plastic parts for all machines in the firm's line, plus many parts to other manufacturers. The firm also offers design and engineering services.

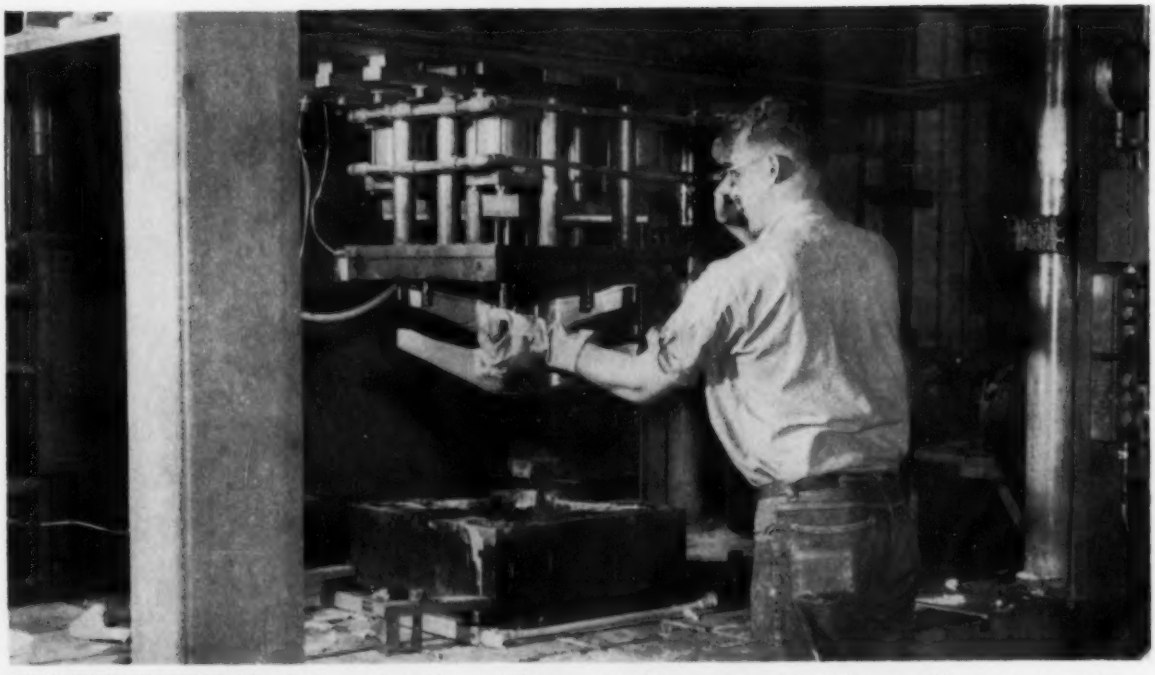
In practice, Gisholt finds that molded Fiberglas-reinforced plastic parts have many advantages over their metal counterparts. These include: economy—saving as much as 50-pct on production costs; lightweight—easier to handle or remove for maintenance; greater pound-for-pound strength. They resist abrasion, corrosion and impact, and permit low-cost design changes. Tolerances are well within requirements. In addition, they can be molded with any desired built-in color.

High Output—Matched metal die molding is used for large-scale production. This method requires permanent tooling, using large molding presses.

The matched metal die process has several benefits on long runs. It gives a smooth finish on both sides of a piece. It gives good stability to dimensions, properties and appearance. Density is high and scrap loss is low. The process also permits high production at a low unit cost.

For small lots, the contact or hand lay-up method may be more desirable. When used properly, this method is fast and economical.

Rather inexpensive molds and hand-operated presses can handle work ranging from small impeller wheels or door handles to large machine housings. Even larger parts such as plastic auto bodies can be produced.



VOLUME OUTPUT: Matched metal molds of 200-ton press shape parts, as heat from molds cures the resin.

ONE MAN HANDLES: Machine guards of plastic are light-weight, eliminating use of hoists or cranes.

WELL GUARDED: A Federal electronic comparator gages to millionths in a constant temperature room. Gage blocks are wiped with lint-free tissue, handled with rubber jacketed tweezers. Operator works from behind a plastic breath shield. Many a measurement error can be traced to the effects of dirt.

How to Conquer Gaging Errors

Learn to Know These Pitfalls of Precision

By **C. W. Kennedy**—Mgr. of Training, Federal Products Corp., Providence R. I.

There are nine major causes of errors in precision gaging.

Learn to cope with these and your measurements will be more dependably accurate.

▪ Metal parts made accurate to a thousandth of an inch no longer represent the utmost in craftsmanship. In many plants, a tenth of an inch is now the standard tolerance. Indeed, the time is here where some firms cannot allow size differences of even a few millionths.

Making parts to such tolerances is impossible without accurate gaging. But accurate gaging is itself impossible if even the slightest liberties are taken with the design, handling and maintenance of measuring instruments.

Precision gaging has nine most common enemies: (1) wear, (2) dirt, (3) looseness, (4) pressure, (5) deflection, (6) temperature, (7) vibration, (8) geometry, and (9) approximation. As the demand grows for more accurate metal parts, each enemy looms as a bigger threat to that goal. Each must be recognized in this new light and fought every step of the way.

Wear—Probably because it's so common, this enemy is most often ignored. Count the blowouts and skids from tires on which people stake their lives by letting them wear until they're bald. Then why expect much concern over gage wear?

There are several good reasons. For one, linear measurements are usually made by contact between gaging and workpiece surfaces. The gage wears a bit each time it's used, and inaccuracy grows by attrition.

Wear also deforms gage contacts. When anvils wear out of parallel, as in Fig. 1, where do you get a correct measurement—at A, B, or C? Wear flattens spherical contacts,

too, and produces the discrepancies shown in Fig. 2.

Moreover, most gages contain assemblies of plungers, bushings, and pivots. All of these elements wear and betray the user's confidence in the accuracy of a gage.

The best therapy for gage wear is simple: systematic checking and calibration against accurate masters, plus a reasonable schedule of maintenance.

Dirt — Perhaps this should be treated as precision's Public Enemy No. 1. Many a measurement error can be traced to someone's grubby hands. Those who deal with the millionth of an inch should exceed even surgical standards of cleanliness.

This applies especially to people who can't seem to wring gage blocks together without the use of what is known as wrist oil. A mixture of pore effluent, skin particles, grit, oil, and coolant, it coats gaging surfaces with a cement-like ridge ranging from half a tenth (0.00005 in.) to half a thousandth (0.0005 in.) in height.

Dirt also sneaks inside gage mechanisms to clog them and nullify sensitivity. Abrasion from dirt also speeds wear and, internally, causes looseness.

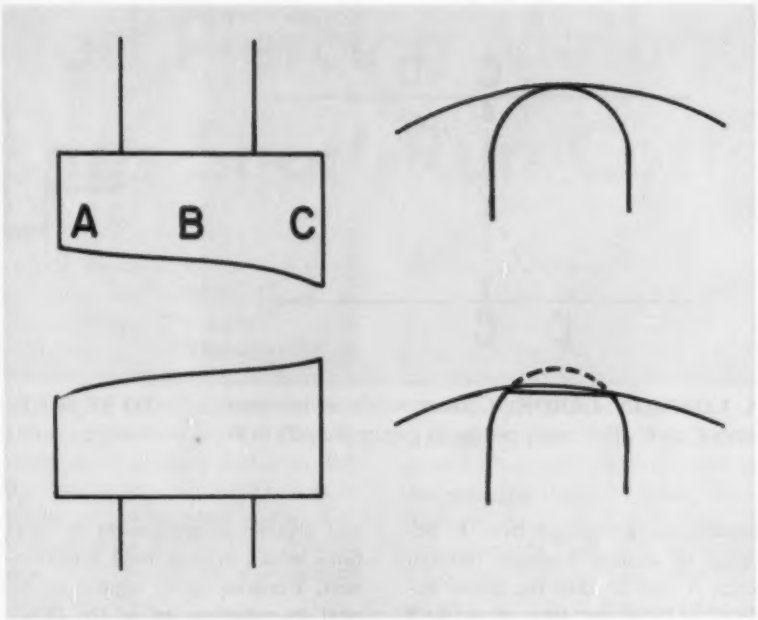
Looseness — This is something the average user of gages seems alert to. He tends to make sure the relevant screws, nuts and clamps are socked up.

However, internal looseness caused by wear, or almost imperceptible wiggles, may fool him. For example, the hardened insert in a gage contact may flap a trifle. Sometimes gage platens and bracket arms creep, or a workpiece doesn't settle firmly in place.

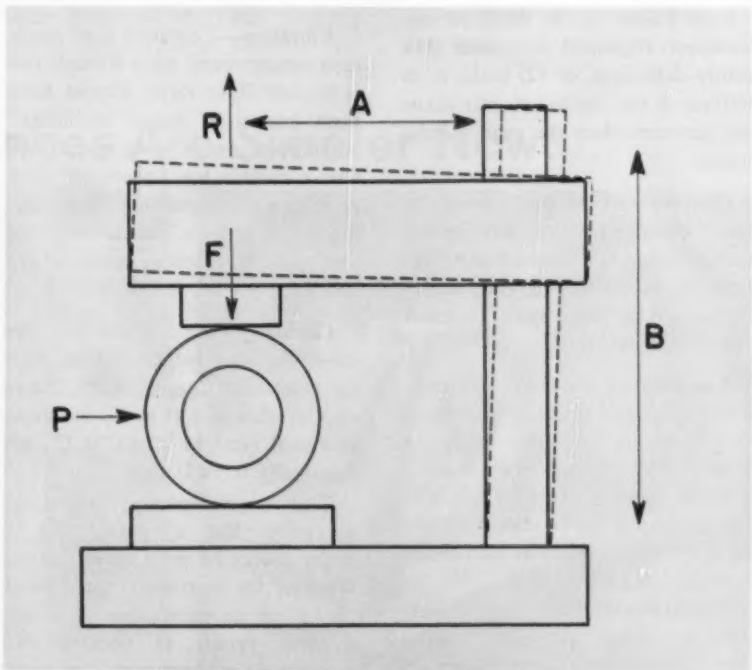
The key to diagnosing looseness is repetition. If the same reading doesn't come up twice, if an indicating meter hand flutters irresolutely, look for looseness.

Deflection—This enemy is ghostlike. Ever present and active, it is never seen nor felt except by special means. Newton explained about deflection in gage frames in ruling that, when a force is applied in one direction, something equal has to give in the opposite direction.

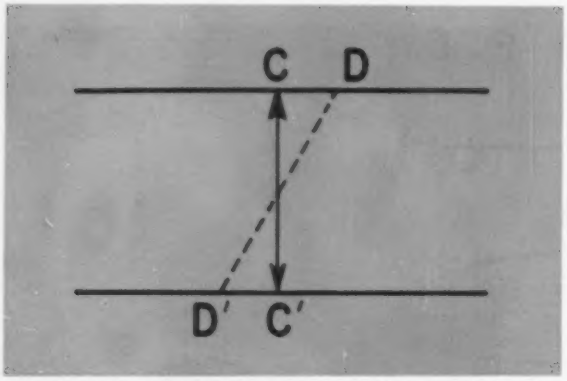
Fig. 3 diagrams it. Visualize pushing a cylinder (P) into a gage. The gage caliper pushes down on the piece with force F. But there is an equal and opposite reaction in the direction R. But force R has a



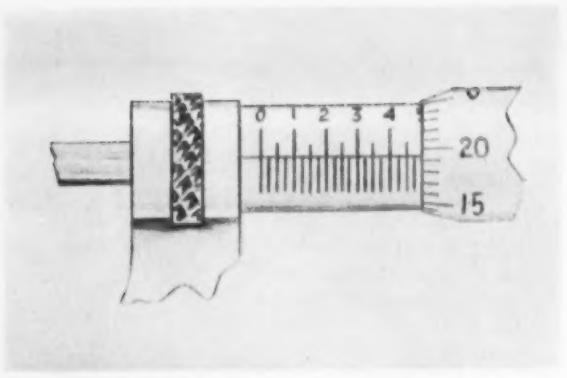
WEAR NEVER STOPS: Anvils gradually wear out of parallel, spherical contacts wear flat. Check such gages against masters frequently.



DEFLECTION IS TRICKY: Forces F and R are opposite, but R gets some extra leverage. Good gages nullify deflection or make it uniform.



A COMMON ERROR: Correct width is obviously from C to C'. But many persist in gaging from D to D'.



TO BE SURE: Higher magnification or more scale subdivisions save guessing at the fourth decimal place.

mechanical advantage over F because of double leverage through arms A and B; thus the frame deflects as the dotted lines show. As a result, what is being measured—the workpiece, the frame deflection, or both combined?

Gage frames can be designed and pressures regulated to either (1) nullify deflection, or (2) make it so uniform it can be taken into accurate account when the gage is calibrated.

Pressure — This force must be heavy enough to have unwavering authority, but not so much as to deform the workpiece. Pressure errors almost always stem from too much rather than too little.

Temperature — Here's a ringleader in measurement error. Everyone agrees a workpiece is bigger when it's hot, but too often nothing is done about it. If any action is taken, it most likely involves cooling the part too much at the nearest drinking fountain.

There should be a big flashing sign in every precision gaging area: "Have the Temperatures of the Workpiece, Gage and Master Alike." It's as simple as that. For few workers realize how rapidly metal absorbs body heat. Nor do they realize that it takes 10 times as long for the temperature rise to drain off.

A seemingly inevitable tendency in plant layout is to put precise, delicate, and costly measurement and production equipment in locations which cripple their effectiveness. Favorite spots appear to be next to radiators, or in the direct rays of the afternoon sun, or near a door that's opened and shut 50 times on subzero days.

Vibration—This item is to precision measurement what Khrushchev is to our State Dept. People have been known to put a "millionth" comparator on an aisle where fork trucks rumble by. Others set them next to air compressors or thumping punch presses. The moral is: Be sure you do precision work where you can't get the jitters.

Geometry—An instinct for this subject always helps the man with the gage. If he's gaging width, thickness or diameter (Fig. 4) his measurement must be from C to C', not diagonally from D to D'.

This is elementary, almost to absurdity. But it points out a major source of error, nevertheless. Whether the instrument be a hand "mike" or an interferometer, many workers persist in cocking the workpiece or cramping the gage just enough to get a wrong answer.

Approximation—A look at the micrometer reading in Fig. 5 shows where this enemy lurks. Yes, it reads 0.494 in.—and a little more. What's your guess on the "little more"—0.4942, 0.4943, 0.4944, or 0.4945 in.?

Whatever it is, you're approximating. We all like to guess when we can't see the exact answer. But what's worse, having guessed, we feel compelled to stick mulishly to our estimate. As if it were, indeed, the true reading.

Approximation probably causes more wasted time and money in rejections, salvaging, disputes and correspondence than all other measurement errors put together. But if the micrometer has a vernier scale, the uncertainty is removed.

The usual cure for guesswork approximations is to get an instrument with higher magnification, or one with an accurate scale subdivided more closely.

The demand for more product reliability in many fields is growing steadily. It will call for more workmanship in terms of a few millionths of an inch. To reach this goal, industry must polish off its techniques for gaging minute size differences.

Other causes of gaging errors are known, and still more will be discovered. But the firm that cleans up the foregoing list will have taken a big step toward greater precision and accuracy.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

High-Speed Piercing Method Slashes Short-Run Costs

Are you paying for costly dies and setup changes to do short-run piercing work?

This vending-machine maker, faced with some 500 short-run designs, found a fast, low-cost way to pierce them.

By E. J. Egan, Jr.—
Machinery Editor

▪ Accurate piercing of different hole shapes and sizes in a run of a few dozen or a few hundred sheet metal blanks can eat up a lot of time and money. It's bound to if you use a regular punch press for such work.

The reason is simple: The standard punch press is a mass production tool. Setting it up for a handful of pieces still involves a costly routine of layout and die making.

You might save in some cases by using stock punches and dies. But it's seldom you can mount them to pierce all the openings you need in a single press stroke. Usually, each new "hit" means an exasperating setup change.

Low-Cost Answer—By contrast, turret punch presses offer a fast, flexible, low-cost way to handle a wide range of short-run piercing work. Quick-change punches and dies can be mounted in as many as 20 turret stations. In single "hits," or an overlapping progression of punch strokes, this tool assortment can pierce any number of different openings in a single setup.

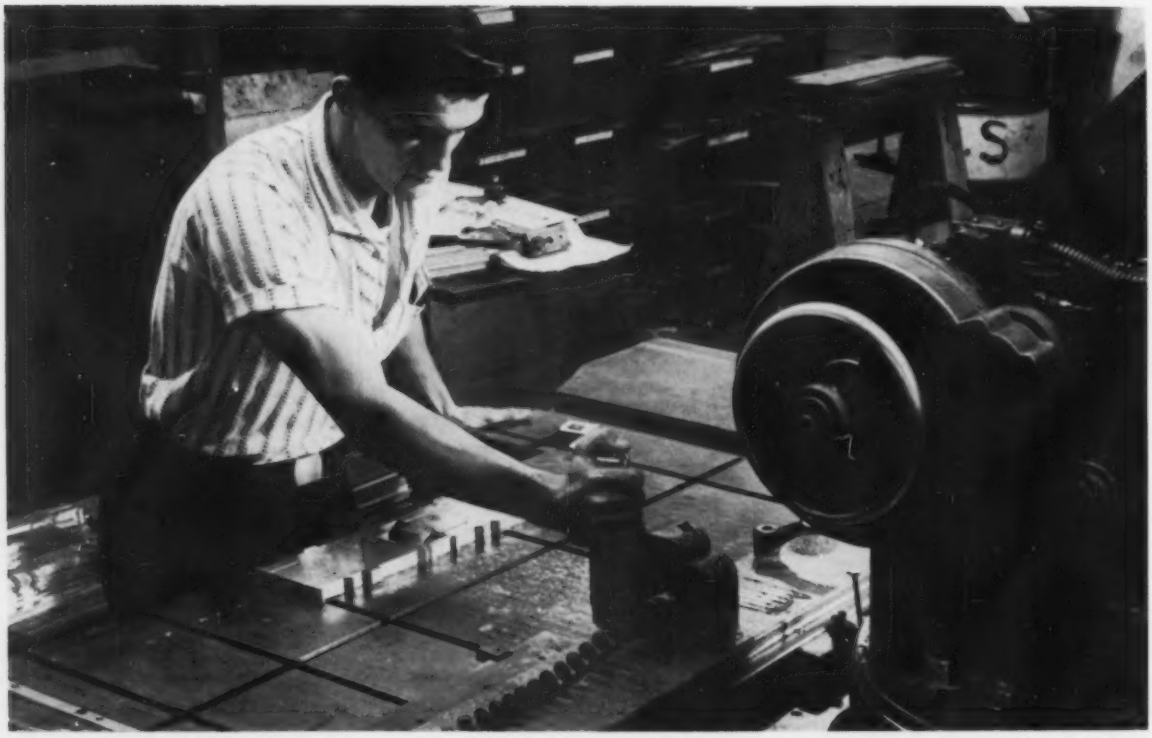
Proof of the turret machine's short-run versatility is well shown at the plant of Rudd-Melikian, Inc., Hatboro, Pa. A leading builder of coin-operated food and beverage dispensers, the firm uses some 500 different designs of pierced parts in its line of vending machines. Parts are made out of mild steel, aluminum, and stainless sheet stock.

Output of any pierced item seldom involves 1000 or more pieces;

Part-Design Changes Are Simpler Now...

NO MORE OF THIS: Formerly, costly piercing dies made obsolete by design changes could only be shelved.

NEW METHOD: Now, any new part design simply calls for making an inexpensive steel template.



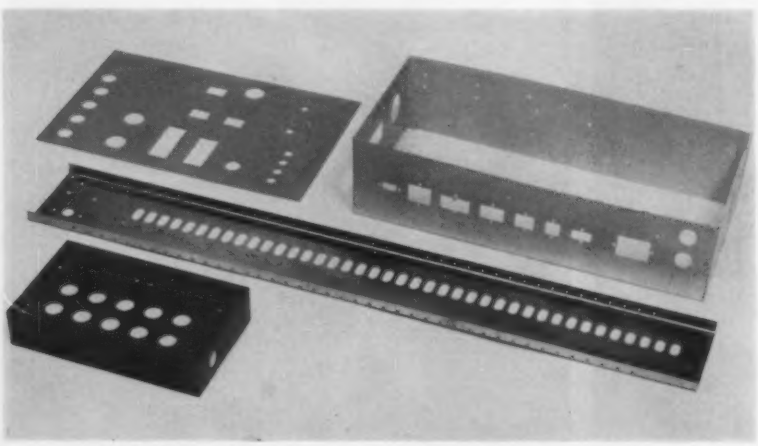
EASY AND SAFE: Well clear of the press turret, operator actuates "hits" by engaging the stylus in a series of template holes. Holes are color-coded to show where different size punches must be used.

lots of from 5 to 100 units are more the rule. Part designs change rapidly as the firm's engineers improve and expand vending machine functions and services.

Used Six Vendors—Until April of this year, almost all of Rudd-Melikian's short-run piercing was done on standard punch presses. The firm ran one 45-ton unit full time in its own shop; it also kept six outside vendors busy making dies and pierced parts.

Production scheduling was not only awkward, it was upset frequently by changes in part designs. Long waits for expensive tooling and production were routine on almost every new order for a mere 100, or 200, or 500 parts.

What became of the old dies when a part design was changed? "We've got shelves full of them just collecting dust," says Nicholas Yacavone, R-M's plant superintendent.



WIDE VARIETY: The turret press pierces all holes in these typical vending machine parts in single setups with stock punches and dies.

Too Much Scrap—Excess inventories of obsolete parts were problems, too. "We could always use a few pieces to finish out a model run," Yacavone explains, "and we'd send a few more to spare-parts stock. But the rest? Just scrap."

In April, however, this picture of upset schedules, outmoded dies and overstocks of obsolete parts changed almost overnight. That's when the firm installed a 20-station turret punch press made by the Wiedemann Machine Co., King of Prussia, Pa. A 15-ton unit, it will pierce 28 x 40 in. sheets.

Set up in place of the regular punch press, the turret machine

quickly became the hub of all pierced-part fabricating. Not one man was added to the work force. Yet within four months, and running only one 8-hour shift per day, the new press took over 98 pct of all the firm's 500-odd piercing jobs.

Brings Many Benefits — Major savings showed up right away in a number of key-cost areas. For example, costly layout work and die making stopped abruptly.

On the new press, workpiece openings are pierced in quick succession by inexpensive stock punches and dies mounted in twin upper and lower turret stations. A kit of 144 sets of these tools was ordered with the press to handle any size or shape of opening the firm might need, including round holes up to 3⅛ in. in diam.

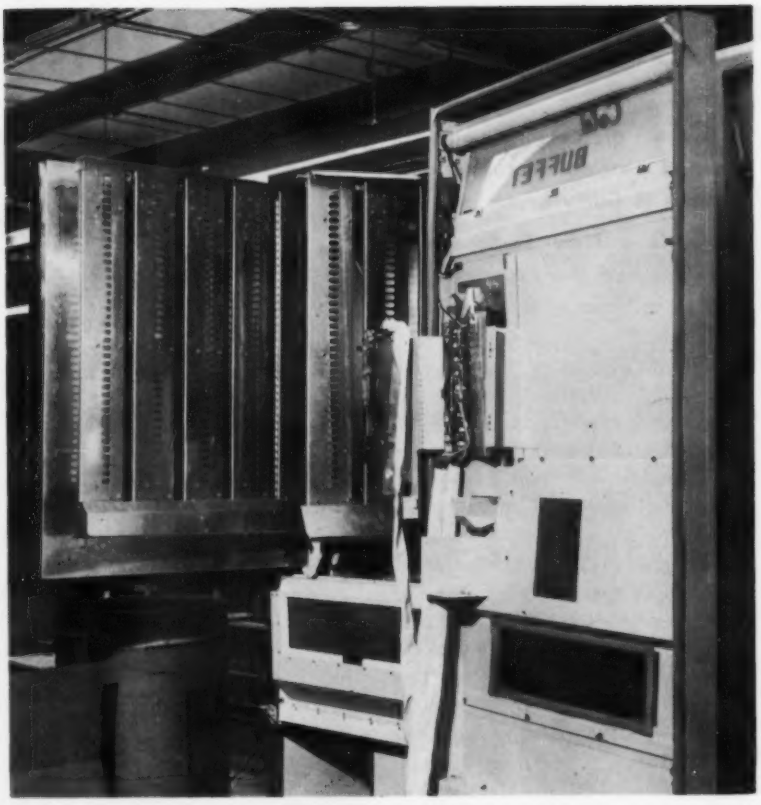
Using a pantograph setup, the operator actuates successive "hits" by engaging a metal stylus in a pattern of holes pierced in a flat steel template. Each template hole corresponds to the center of a pierced opening in the workpiece.

By-passing lengthy layout work, the press pierces ¼ in. diam template holes to linear coordinate dimensions the engineering department sends along with each part print. Precision scales on the press table are coupled with optical scanners to insure template accuracy. Center-to-center distances are held to within ±0.002 in.

Color Code Helps—All template holes denoting a certain punch are daubed with a paint spot of the same color. A matching color tab is placed at the turret station containing that punch.

To start piercing, the operator first decides which chain of color-coded template holes to trace with his stylus. He then turns a handwheel to rotate the turret assembly until the station with the matching color tab comes into punching position. From this point on, the press trips whenever the stylus is firmly engaged in a template hole.

To emphasize the press' speed and flexibility, Yacavone points to



FINAL ASSEMBLY: As many as 200 pierced and fabricated parts are used in larger vending machines, such as this "cold buffet" model.

an electrical junction box cover. It has 57 openings of various sizes.

"It used to take a man 11 days to make 500 of these on our regular punch press," he explains. "On the new machine, the same man makes that many in eight hours. In one setup, using a large sheet, he pierces openings for several covers. Then we shear them to size."

Savings Run High — Yacavone says similar savings in time and work handling apply to all parts switched over to the new press, "including parts formerly bought outside." He estimates that R-M now makes these parts for about 85 pct less than it used to pay vendors.

"We asked a vendor to bid on a die not long ago," he says. "It took him four days to come back with a quote—$850 and six weeks delivery. Meanwhile, we figured out how to do the job on the Wiedemann with our stock tools. We had the parts made three days before he even came back with his price."

Setup changes take just a few minutes on the new press. "This means no more overruns on obsolete parts," Yacavone observes. "Now we keep just a few pieces ahead of the assembly line. If we run low on any item, we just clamp its template on the machine. In an hour, or maybe less, we've got 25 or 30 pieces to tide us over."

In addition to its speed and flexibility, the turret press is safe to operate. The operator's hands, busy with the stylus and turret handwheel, stay well forward of the actual punching area. Moreover, anyone can learn to operate the press in a few hours.

Based on savings already achieved in the first six months of use, Rudd-Melikian officials estimate the new press will pay for itself in another year.

Vacuum Die Casting Gets Boost

To most die casting shops, the idea of casting successfully in vacuum is fairly new.

Here's a New England firm that has had the experience of making millions of such castings.

▪ Vacuum die casting is not a new story to Veeder-Root, Inc., well-known maker of counting devices. The Hartford, Conn., firm has designed and built its own vacuum die casting equipment for more than 20 years.

Daily, batteries of these high-speed machines turn out precision castings for V-R counting units and other products. Some parts are cast from zinc alloys, others from tin-base metal.

Essentially, the casting machines are the injection type that pressure-feed molten metal into the die cavity. The actual casting operation, however, is done in a vacuum of 29½ to 30 in. of mercury. Electronic controls insure that dies are positioned accurately before each "shot" is made.

Automatic Delivery—At the end of the casting cycle, parts are automatically freed from the die. A special device ejects them into a hopper outside the machine. However, the vacuum is maintained at all times.

The firm's vacuum cast parts are dense and have smooth surfaces. Smaller castings show no evidence of flow lines. Ordinarily, the only finishing needed is a superficial buffing to achieve a satin-smooth surface.

Casting to tolerances within 0.0005 in. is a key feature of the technique, according to G. L. Manke, V-R's chief engineer. For example, parts vacuum die cast more than 20 years ago can still be press-fitted into identical parts made on the present automatic machines.

CLEAR VIEW: Operator observes vacuum die casting operation through a special window on one of the Veeder-Root automatic machines.

Need Pure Metal—Success of the process depends largely on metal purity. Physical properties of casting alloys are analyzed carefully, and a spectrograph checks chemical content. On zinc-base alloys, for instance, tin content must be under 0.001 pct.

The V-R technique also demands precision die making. Dies are ground, diamond lapped and polished to produce the perfect surfaces and minimum flash specified for cast parts. Because the dies are made so carefully, castings can be stripped or ejected without distortion. Die taper is only 0.0005 in. per in. of sidewall, and ejector marks are eliminated.

Die life is excellent. Dimensions remain constant over runs of several million castings.

V-R's vacuum technique is well suited to volume casting of such precision parts as watch cases, gears, typewriter parts, and electronic and instrument components.

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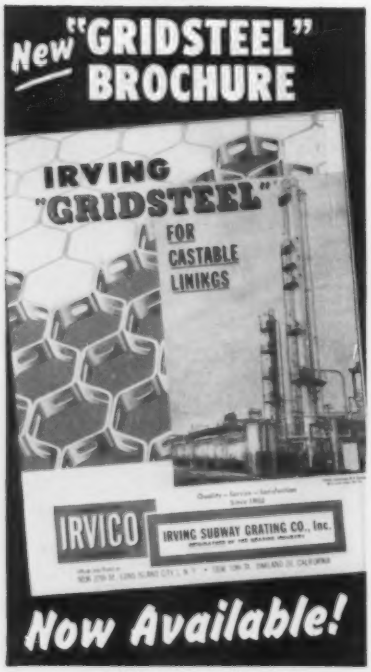

Gridsteel reduces shutdown time for repairs of fire-clay linings in refractory units when used to armor castables.

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FREE TECHNICAL LITERATURE

New Catalogues And Bulletins

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 83.

Punch Press

Safe, versatile and rugged, a new 15-ton press appears in a data sheet. The sheet briefly outlines its safety features, controls and reliable construction. (Kenco Mfg. Co).

For free copy circle No. 1 on postcard, p. 83

Roller Conveyor

In its dozen pages, a bulletin deals with a roller gravity conveyor. Packed with illustrations, it gives typical applications of the roller conveyor, explains construction features, and tells how to select the right conveyor. Included is a section on steel and aluminum conveyors. (Rapids-Standard Co., Inc.)

For free copy circle No. 2 on postcard, p. 83

Extrusion Presses

Extrusion presses and processing machines for all modern metals are presented in a bulletin. Its 12 pages cover both hydraulic and mechanical equipment for extruding and finishing metal tubes, shapes and bars. (Sutton Engineering Co.)

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Magnetic Units

Magnetic equipment is summarized in a new bulletin. Products described include: equipment for protection against tramp iron such as magnetic pulleys; suspended magnets; drum, plate, grate and spout magnets, and an electronic metal detector; materials handling equipment like lifting, holding and roadsweeping magnets; parts separators, hand magnets; portable drill stand magnets and grinder holding magnets. (Stearns Magnetic Products.)

For free copy circle No. 4 on postcard, p. 83

Safe Solvent

A pocket-size 16-page booklet introduces a neutral, non-toxic, non-flammable and odorless solvent. This solvent cleans, degreases and rustproofs metal surfaces in one operation. (Harry Miller Corp.)

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Tracer Control

A data sheet announces a new idea in tracers. It outlines a fully automatic tracing system for milling machines and lathes. (True Trace Sales Corp.)

For free copy circle No. 6 on postcard, p. 83

Turret Drill

A 6-page folder describes a six-spindle, power indexing turret. This turret has pre-selective spindle speed and depth controls. It machines to very close tolerances, demands little maintenance. (Burg Tool Mfg. Co., Inc.)

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Gear Drives

Complete data a 6-page catalog supplement supplies covers horsepower ratings, dimensions, mounting, and construction principles of

HANDLING STEEL SHAPES of all types, this American 300 Series Self Propelled Crane sets a fast pace in the yards of a midwestern manufacturer. Dependable, versatile American Cranes have fast cycling, fast travel and precision load control that keeps materials moving fast in industries throughout the country.

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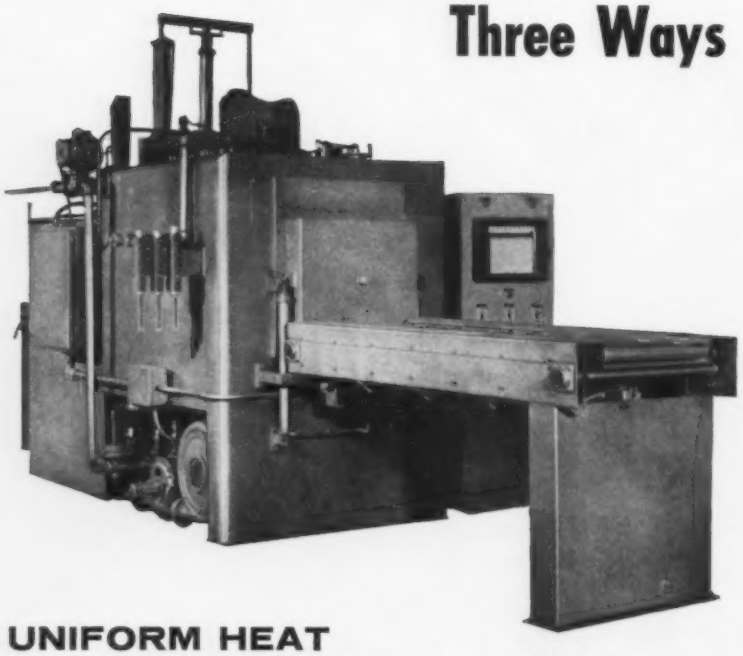

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FREE LITERATURE

new quadruple reduction speed reducers. Two sizes of double reduction helical gear drives, three sizes of triple reduction helical gear drives and five sizes of quadruple reduction gear drives are detailed. (Link-Belt Co.)

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Steel Wheels

Wheels of tool steel, presented in a bulletin, are designed to outlast other wheels for many different applications. The 8-page bulletin covers track wheels, sheave wheels, brake wheels, gears, pinions, etc. These are of low carbon steel (alloy or not to suit conditions) with wearing surfaces carburized and hardened. (Tool Steel Gear & Pinion Co.)

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Tape-run Tools

Machine tool controls an 8-page booklet reviews provide automatic point positioning and contouring. Identifying a "leader in numerical control", it lists five advantages: (1) simple to use, (2) reliable, (3) low price, (4) adapts to a wide variety of machine tools, (5) increases these tools' versatility. (Stromberg-Carlson.)

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Drill Bushing

Literature now available introduces a new drill bushing used in plastic tooling. This drill bushing eliminates "spin-out" due to overheating. (American Drill Bushing Co.)

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Drilling Unit

How to reduce the cost of drilling small holes is told in a folder. Outlined is a machine which can instantly index from one drill size to another or from one type of operation to another. (Burgmaster Corp.)

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Multi-job Tools

Multiple operation production tools are covered in a 16-page catalog. It describes a wide variety of tools specially designed to combine 2, 3, 4 or more related machining operations, do them all at the same time, with just one tool and one setup, cutting costs and assuring absolute concentricity and uniformity of finished work. (McCrosky Tool Corp.)

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Magnetic Rubber

Magnetic rubber is described in a 4-page bulletin. This newly developed, flexible magnetic material resists oils and acids. It comes in molded or sheet form. (Denman Rubber Mfg. Co.)

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Hydraulic Presses

Devoted to an extensive line of manual and air-operated hydraulic presses is an 8-page bulletin. Presses run from 3-ton mechanical arbor presses to 25, 40, 60, 80, 125 and 150-ton units. (ACCO Equipment Div., American Chain & Cable Co.)

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Spring Washers

Specifications in a new folder cover washers which solve spring problems involving high loads in limited space. Most-used sizes, it notes, are now available from stock in two thicknesses; seven diameters range from 0.375 to 1.500-in. OD and 0.190 to 0.755-in. ID. Load range for single units covers 30 to 1200 lbs. (Associated Spring Corp.)

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Polyglycol

Because of increasing interest in polyglycols, a revised edition of a 24-page booklet is now available on choosing the right polyglycol. Polyglycols are high molecular weight compounds produced by reacting alkylene oxides with compounds having an active hydrogen. (Dow Chemical Co.)

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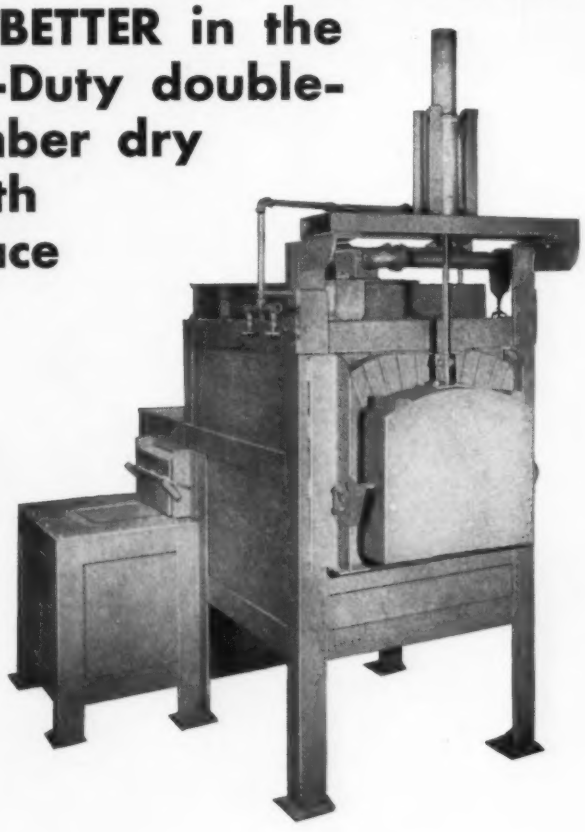

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FREE LITERATURE

Continued

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Coil Springs

Heavy-duty coil springs are subjects of a 48-page handbook. It can help you get the right springs to meet your particular specifications. (Crucible Steel Co. of America).

For free copy circle No. 22 on postcard

Zinc

A new quarterly newsletter contains a wide variety of news about zinc. It's designed to keep readers abreast of new product research, design developments, production improvements, and application and market trends. (American Zinc Institute, Inc.)

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Filing Machines

Power filing machines presented in a bulletin are said to cut costs by removing material 4 to 6 times faster than by hand. The filer doesn't use expensive abrasives or lubricants, either. (Newage Industries, Inc.)

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Pumps, Valves

Engineering data on fluid power motors, pumps, valves, and cylinders is contained in a 4-page bulletin. (Commercial Shearing & Stamping Co.)

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Set-screw Driver

Performance of a new automatic set-screw driving device is reviewed in a 4-page bulletin. Billed as both a building block for fully automated production lines as well as an attachment for a single machine, the device automatically feeds, inserts and tightens socket set screws ranging in diameter from No. 4 to ⅜ in., lengths up to ¾ in. Speeds up to 2500 installations an hour are possible. (Standard Pressed Steel Co.)

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External Cotters

Fifteen standard external, or "hairpin," cotters are described in a data sheet. It gives prices and dimensions, including wire size, pin diameters and lengths. Included are several new cotters. Cotters described are of SAE-1095 steel finished with cadmium plate. (Hunter Spring Co.)

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Repeat Cycle Dial

A 4-page bulletin describes a miniature repeat cycle dial timer which controls two independently adjusted load circuits for on-off cycling. This dial has uses in machine and process control. (Automatic Timing & Controls, Inc.)

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Power Hacksaws

A 20-page price selector deals with hand and power hacksaws, hole saws, bandsaws, hammers and ground flat tool steel. (Capewell Mfg. Co.)

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Weighing System

Hydraulic tank weighing systems are shown in a catalog. It details equipment which teams up with load cells to provide indication, recording, printing and controlling in tank weighing installations. (A. H. Emery Co.)

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Cutting Torches

Oxweld flame-cutting equipment is described in a 6-page folder. Torches that can be used interchangeably with every fuel gas combination — oxy-acetyline, oxy-propane and oxy-natural gas — are

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31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70

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outlined. It covers manual and machine-cutting equipment for use on every flame-cutting job from thinnest sheet metal to 10-ft thick risers. (Linde Co.)

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Steel Conveyors

Looking for a steel belt conveyor? If so, an 8-page guide gives some helpful suggestions on units for conveying materials through ovens, handling metal parts where they'll backlog or accumulate, etc. Text covers: carbon and stainless steel belts, methods of support, end joints, inclines, belt tension, and in short, all the information necessary to specify the steel belt. (Sandvik Steel, Inc.)

For free copy circle No. 32 on postcard

Small Parts

Small parts described in a bulletin are zinc alloy diecast and molded thermoplastic products. Produced by automatic diecasting and injection molding techniques, these precision parts are turned out in one high-speed automatic operation to close tolerances, trimmed and ready for use. (Gries Reproducer Corp.)

For free copy circle No. 33 on postcard

Refractories

Firebrick is the subject of a technical data card now available. (Refractories Div., Babcock & Wilcox Co.)

For free copy circle No. 34 on postcard

Stainless; Chemicals

Uses of stainless steel in the chemical industry is discussed in a 40-page booklet. Special sections cover: process industries, plastics, petrochemicals, detergents, nuclear power, and others. (Allegheny Ludlum Steel Corp.)

For free copy circle No. 35 on postcard

Compressors

Medium-pressure compressors are outlined in a new bulletin. Its design and construction data aims to aid you in proper selection of this equipment. Capacities range from 1000 to 12,000 cfm for pressures up to 15 psig. (Roots-Connersville Blower).

For free copy circle No. 36 on postcard

Fluid Power

A 4 page bulletin covers a new "power saving" pump. An integral infinitely adjustable pressure unloading control with a range of 200-1100 psi and adjustable volumes up to 3100 cipm are key pump features. (The Oilgear Co.)

For free copy circle No. 37 on postcard

Magnetic Tape

Detailed repetitive spectrum analyses of information recorded on magnetic tape are now possible with a new tape loop adapter. A bulletin gives details. (Consolidated Electrodynamics Corp.)

For free copy circle No. 38 on postcard

Wire Rope

Properties of 7-wire, high strength, stress relieved strand for prestressed concrete are discussed in a brochure. (Leschen Wire Rope Div., H. K. Porter Co., Inc.)

For free copy circle No. 39 on postcard

Data Processing

A 6-page bulletin describes a data processing system. The system can receive up to 1000 input signals at high speed, converting them to digits. It puts the information on magnetic tape in a format suitable for any computer. (Beckman Systems Div.)

For free copy circle No. 40 on postcard

Low-alloy Steel

Three grades of a high strength, low alloy steel are analyzed in a 20-page booklet. It explains how wider uses for manufacturers and fabricators result from production of three separate grades. Details appear on mechanical characteristics of each grade. (Kaiser Steel Corp.)

For free copy circle No. 41 on postcard

Cutting Oil Improves Work

There may be better cutting oils around for your use. But searching for them takes time. Time means money.

Remember this, though—Using the right fluid for your work can pay off many times the investment of such a search.

▪ Using the right cutting fluid is important. A little time, effort and money spent on searching out the best one for your particular need usually pays off many times this investment.

How cutting fluids can improve machine tool operations is demonstrated at the Milford, Conn., plant

Heavy-duty cutting fluid protects miller shaft and cutter.

of U. S. Electrical Motors, Inc. Until recently, the plant used a conventional soluble cutting oil, mixed in a 10-to-1 (water-to-oil) ratio, on a Milwaukee milling machine. This machine cuts keyways in motor shafts.

Plant Switches, Saves—Switching to a heavy duty soluble cutting oil, developed by Gulf Oil Corp., the plant realizes several advantages of economy and machine tool performance. The oil mixes with water in a 35-to-1 ratio, instead of 10-to-1. Service life of this mixture is three months; contrast this with three weeks for the conventional oil.

Better cooling properties of the 35-to-1 mixture of Gulfcut oil double tool life, according to its user.

Forms Durable Film—The oil forms a thin but extremely durable anti-weld film between the tool and the chip. This permits holding close tolerances on critical cutting jobs. Tolerances are held with much greater consistency than previously, the motor maker reports.

Oil splashes on machinery and personnel are fewer, too. The heavy duty grade cutting oil contains a non-foaming agent. This prevents excessive frothing. It also lets oil flow freely to and from the work.

Foil Making

New economical method makes zinc foil continuously

In pilot plant use is a new way of making thin zinc foil. Unlike conventional rolling methods, it employs electrolytic deposition. This results in uniform thickness, high chemical purity, unique ductility and tensile strength.

Turning out sheets ranging from 0.005 to 0.001-in. thick, 26-in. wide, the setup produces developmental quantities at American Smelting & Refining Co.'s laboratory in South Plainfield, N. J.

Has Cost Advantages—The firm, long a producer of slab zinc, finds the process very economical; it's considering a large scale installation at its Corpus Christi, Tex., plant.

"The new foil will sell at a lower price per square foot than copper foils," says the company. "When in commercial production, the zinc foil will probably be cheaper than comparable aluminum foil."

Joining

Electronics firms demand high-quality welding

Semiconductor producers, like other electronics firms demand uniformity and high quality. This goes for both finished products and processes used to make them.

At Sylvania Electric Products, Inc., Hillsboro, N. H., a pioneer in

As operator watches, welder automatically welds transistors.

the semiconductor field, exact quality control is observed from raw materials to finished products.

Refining Is Important — Manufacture of refined germanium crystal is the first, probably the most

Want More Data?

You may secure additional information on any item briefed in this section by using the reply card on page 83. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

Republic Steel's "Bar Mill of Tomorrow"

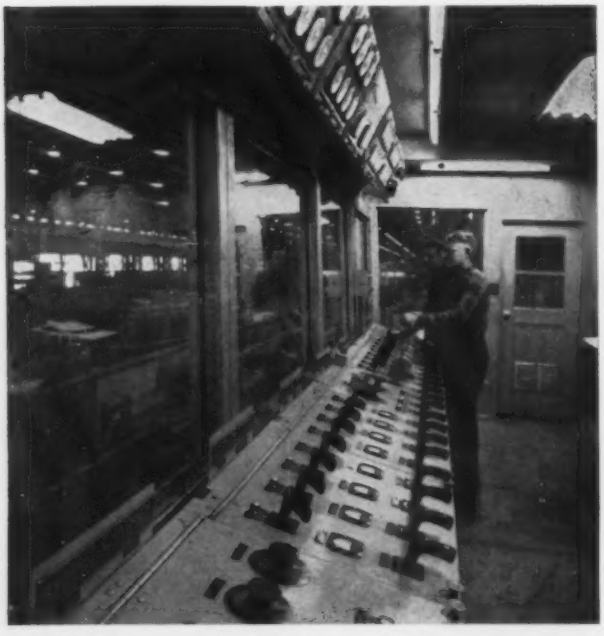
MEANS BETTER STEEL BAR SERVICE TODAY

WHITE-HOT STEEL BAR PRODUCTS are shown being run off into a cooling bed at Republic's "Bar Mill of Tomorrow" at Chicago, Illinois. Steel billets, three and four inches square, are reduced into high quality bar products at the rate of 3,000 feet per minute. Production off the mill includes torsion bar quality steels, coil spring and spring steel bar quality, cold heading and cold extrusion quality, as well as regular merchant quality. A definite advantage to users of torsion bar quality material is the fact that bars coming off the new mill will require less centerless grinding to achieve a nearly perfect round.

REPUBLIC STRENGTHENS POSITION AS LEADING PRODUCER OF BAR MILL PRODUCTS. The recent opening of the new 11-inch Bar Mill at Chicago, Illinois, together with other strategically located Republic bar mill facilities, will provide the most complete range of sizes and materials—carbon, alloy, stainless, and titanium—in ⅜" rd. to 10" rd. and equivalent footweight sections.

Republic is the nation's number one producer of alloy and carbon steel bars. Likewise, Republic leads in the production of special quality steels.

The new Republic facility incorporates all of the most advanced design features of existing bar mills—plus the addition of some unique features to help Republic meet today's exacting require-



FROM THIS AIR-CONDITIONED MASTER CONTROL ROOM, speeds of the 16 roll stands in the quarter-mile long mill are synchronized and controlled so that three- and four-inch square steel billets can be reduced in size and shape into high quality alloy and carbon steel bar products.

A FOUR-INCH SQUARE BILLET is about to start its run through the new 11-inch bar mill. After being uniformly heated in a furnace, the billet passes through a series of 16 rolling mill stands and is reduced to proper size. The mill is capable of producing ⅜- to 1¼-inch rounds and equivalent sizes of squares, hexagons, special sections, concrete reinforcing bars, and one-inch to four-inch wide flats.

VERTICAL LOOPING OF STEEL, a unique principle in American bar mill design, is shown above. As the billet passes through each set of rolls, its size is reduced and its length increased. Note vertical and horizontal rolling stands. On other mills, the steel is looped off to the side or below the mill. On Republic's "Mill of Tomorrow", the steel is looped vertically above the mill while stand speeds are synchronized.

ments for high quality. The new mill is producing high quality alloy and carbon steel bar products in heavier coil weights, and is capable of producing closer than standard tolerances.

IN THICK TIMES OR THIN, REPUBLIC STICKS BY ITS BAR CUSTOMERS. Norman W. Foy, Republic's Vice President in Charge of Sales, puts it this way. "Fair treatment to our customers has been Republic Steel's firm policy over the years. It has been our aim to build up our capacity so that we could provide more steel tonnage for existing customers as well as take on additional users. We have always considered our assurances of steel to customers to be real assurances, for we had to have the capacity to back up the orders. This is the reason for our bar mill expansion program. When you place your orders with Republic, you know that in thick times or thin, we have the capacity to fill those orders or we don't take them."

"BAR MILL OF TOMORROW" IS REPUBLIC'S $18,000,000 INVESTMENT IN THE BELIEF THAT—THE FUTURE IS GREAT IN A GROWING AMERICA. The new mill was erected as part of Republic's $200,000,000 expansion program being completed this year. This investment is proof of Republic's faith in the future. Faith that America's economic growth potential is stronger now than ever before. Faith that "The Future is Great in a Growing America."

LAB FIELD MILL
3-DIMENSION Metallurgical Service

REPUBLIC'S FAMED 3-DIMENSION METALLURGICAL SERVICE TEAMS—field, mill, and laboratory—are always available to help your personnel apply Republic's high quality bar products to your product. Carbon, alloy, stainless, and titanium metallurgists will assist in the selection, application, and processing of the right bar product for the job. There is no obligation. Mail the coupon for full facts.

REPUBLIC STEEL

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World's Widest Range of Standard Steels and Steel Products

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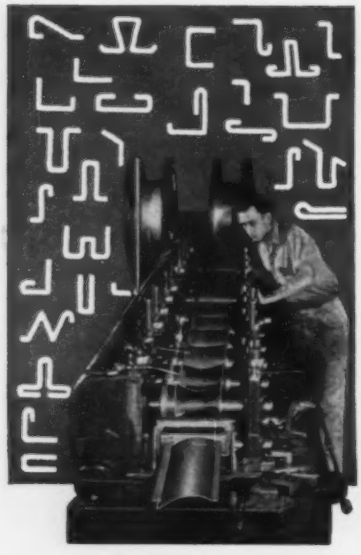


With a YODER... ONE MAN PRODUCES 30,000 FEET OF SHAPES A DAY!

Cold-roll forming with a Yoder Roll-Forming machine makes spectacular production possible in many metalworking applications and industries.

A multitude of shapes, simple or complex, produced from a wide variety of coated or uncoated stock, and destined for a virtually endless list of purposes, can be easily, quickly and economically produced with a Yoder cold-roll forming machine.

Whether it be moldings, structurals, siding, roofing, tubulars, cabinet shells, or any one of a thousand requirements, it can be quickly produced with accuracy and uniformity the Yoder way. The conversion cost is usually so low that even part-time operation makes a Yoder cold-roll forming line a profitable investment.

A great many modifications of the basic shape such as welding, coiling, ring forming, notching, perforating, embossing and cutting to length, can be simultaneously introduced with little or no additional labor cost. It will pay you big dividends to fully investigate the advantages of Yoder cold-roll forming. A fully-illustrated, 88-page book clearly discusses every important aspect of this amazingly versatile method of metal fabrication... it is yours for the asking.

THE YODER COMPANY
5510 Walworth Ave. • Cleveland 2, Ohio

ENGINEERING YODER MANUFACTURING **COLD ROLL FORMING MACHINES**

important, stage in making transistors. These crystals must be as free of impurities as possible.

Ingots of germanium are placed in horizontal zone refining units. Induction heating in an atmosphere of forming gas (a mixture of nitrogen and hydrogen) turns the ingots into molten germanium bars.

Impurities Move Along—As the bars automatically move through the furnace, impurities migrate to one end. After cooling these impurities are cut off, leaving a pure polycrystalline bar of germanium.

Gases from Air Reduction Co., Inc., are used in these critical purification processes. Gases include: nitrogen, argon and hydrogen.

Demands Quality Welds—Constant high quality is maintained in producing component parts of transistors. Precision equipment is employed.

For example, welding a cap to the base of a power transistor calls for considerable welding finesse. An Airco automatic Heliwelding (gas-shielded tungsten arc process) unit meets Sylvania's demands.

A fine weld 1-in. long is performed on deoxidized copper, joining a cap 0.025-in. thick to a base ⅛-in. thick at a speed of 150 ipm.

The operation is completely automatic.

Rolling

Television helps operators at aluminum rolling mill

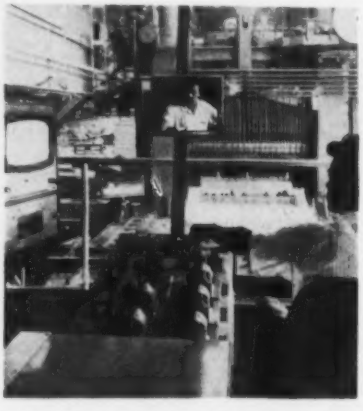
One of television's hottest shows occurs daily on the rolling line at Kaiser Aluminum's new Ravenswood (W. Va.) Works.

Ingots heated to 1175°F, weighing to 12,000 lb are reduced in thickness by operators who control the rolling process. They do this while viewing it on two closed-circuit television hook-ups.

Part of Big Control Setup—The TV setup is part of a $14-million electrical system engineered by General Electric Co. for the aluminum plant, one of the world's largest.

The complete installation includes the first individual stand power supply on an aluminum hot strip mill. A battery charging unit provides 56 circuits. This is one of the largest ever built by GE.

Enjoy Air Conditioning—Armed with the most up-to-date electronic and automatic controls, operators set in air-conditioned pulpits, overlooking the 168- and 110-in. four-high reversing mills.



Monitor at left lets operator view rolling setup better.

The TV cameras give them an unobstructed view as ingots break down into a slab and then roll into desired thickness.

TV Helps Vision—Because operators can only see the near sides of the mills, they rely on the TV to watch the far side. When the slab being rolled is on the blind side of the mill, operators see by a glance at the monitors whether or not it's ready for the return pass.

Mirrors were formerly used for this process but they often clouded up, gave the operators an inverse image, and required frequent adjustment because of vibration.

Maintenance Is Down—The TV systems have required no maintenance, since their installation in mid-May, despite their operating 24 hours per day, seven days a week.

Lighting requirements for the TV cameras are considerably lower than those for mirrors. Only two 150-w spotlights are necessary.

This lightweight "No Charge" spool is typical of Roebling's modern packaging methods that save customers time and money.

Are You Getting What You Pay For?

When you pay for HIGH QUALITY high-carbon wire, you want to be sure you get it. You do, when it is supplied by Roebling.

It is unsurpassed in quality, consistently true to specifications, and absolutely uniform in gauge. Hundreds of manufacturers attest to this fact . . . the qualities that they *pay* for—they *get* in Roebling high-carbon wire. The length of our relationship with customers proves it.

We'll be glad to show you what we mean. For information on superior high-carbon wire or cold rolled strip, write Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

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New Production Ideas

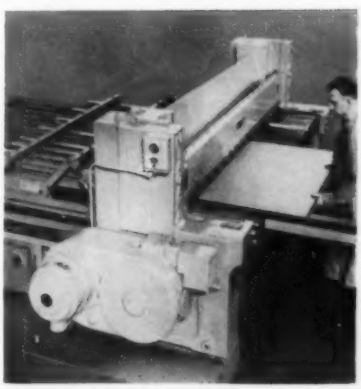
Equipment, Methods and Services

Device Quickly Heats, Solders and Brazes

Safe and portable, this quick-heating soldering and brazing unit draws current only when it's in actual use. The unit consists of: (1) A 10 x 8 x 7¾ in cabinet of cold-rolled steel, which includes a handle for convenient carrying from place to place; (2) A three-wire, 73½-in. long alternating-current line cord; this is neoprene covered with a grounding cap and a line cord grounding adapter; (3) A footswitch with a 6-ft rubber covered line; (4) A work grounding clamp with a 72-in. cable; and (5) A high current work probe with a carbon electrode and a 70-in. cable. Key feature of the unit is its instant heating. The device is ready for soldering or other use as soon as it's plugged in. Current flows only when the operator presses the foot pedal. This eliminates expensive idling. Safety features abound. The transformer is isolated; grounding eliminates shocks; grip is burn-proof. (Auto-Test, Inc.)

For more data circle No. 42 on postcard, p. 83

Unit Feeds, Gages Strip at High Speed



A high-speed unit just announced gages and feeds sheet, coil or strip from standard square shears. It provides automatic trim or cutoff operations. Mounting at the rear of any standard square shear, its electrical control system integrates with the shear's. With it, one operator can feed either sheet or coil to the shear. The unit automatically advances stock to gaging fingers, operates the shear, and carries trimmed stock to a stacker unit. Feed rate adjusts from 80 to 300 fpm. When handling coil stock, the shear uses a hump table which runs in conjunction with the feeder-gage, feeding stock continuously from a coil cradle. An array of W-belts acts as a transfer table in the automated unit. (Press Automation Systems, Inc.)

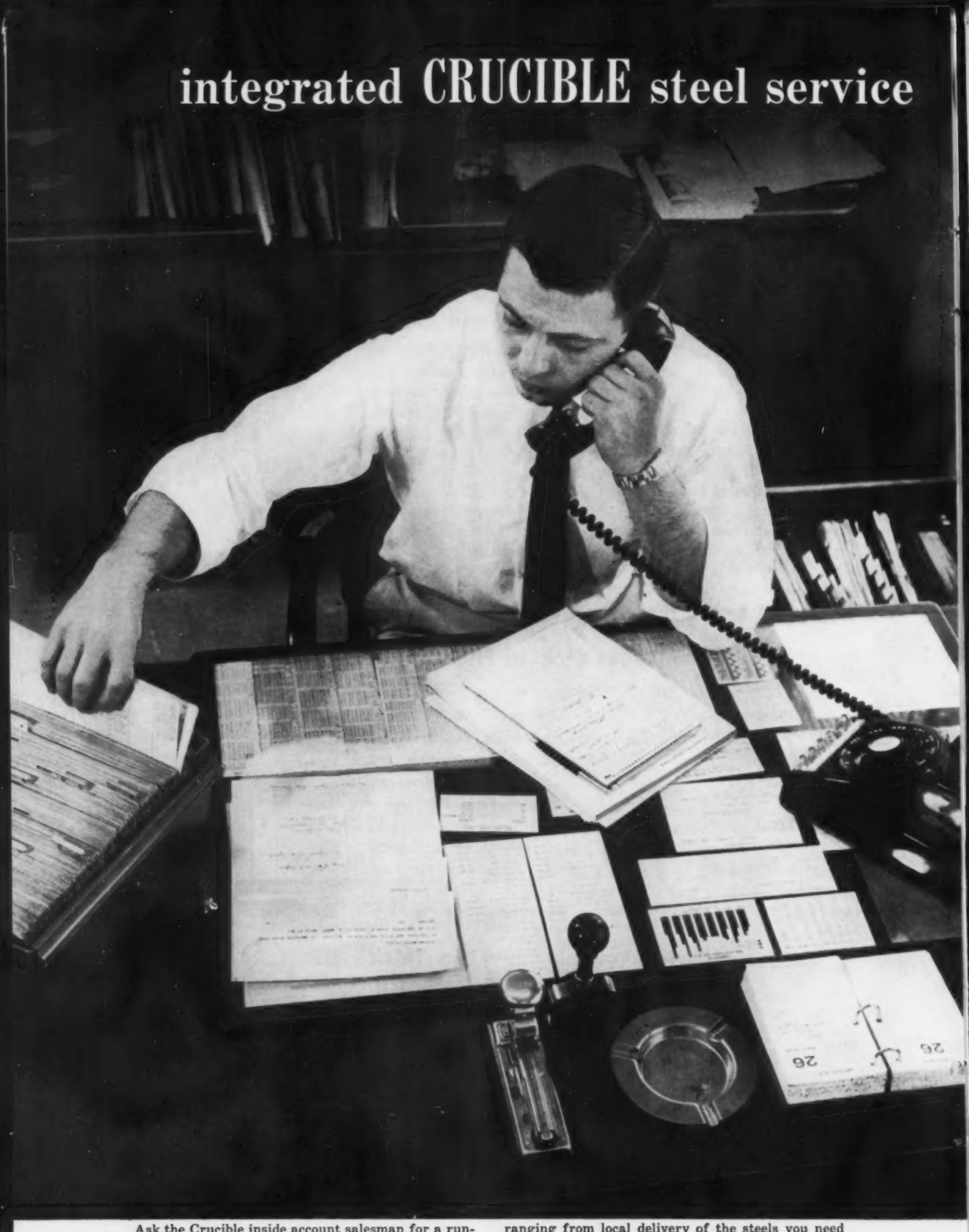
For more data circle No. 43 on postcard, p. 83

Ball-actuated Valve Is Only 1-in. Thick

Ball actuated, new spring return valves are only 1-in. thick and 3-in. wide. Streamlined in appearance, such valves mount easily on machinery even where space is extremely limited. For air, oil or water service, they take pressures to 125 psi, temperatures to 150°F. They come tapped for either ⅛- or ¼-in. pipe connection. The valves adapt easily to a multitude of mechanical applications. Their maker points out that they have many advantages due to flexibility of mounting, elimination of complex links and other operations. The ball actuator can be depressed from any peripheral point of 360° as long as the valve plunger is given its full ⅛-in. travel. Over-travel is 1/32 in. The units are furnished in three-way "normally closed" or "normally open" and four-way actions. (Hunt Valve Co.)

For more data circle No. 44 on postcard, p. 83

integrated CRUCIBLE steel service



Ask the Crucible inside account salesman for a run-down on all the services his warehouse offers. He's your contact with completely integrated services ranging from local delivery of the steels you need to metal research.

makes available a local

4-POINT SPECIALTY STEEL SERVICE

to both large and small users

All 27 warehouses offer
(1) simplified ordering
(2) in-stock deliveries
(3) metalworking assistance
(4) metal research

Each Crucible warehouse is a *specialty steel service center* – stocked, staffed and equipped to give you a wide range of services.

Here's what the warehouse near you can offer –

(1) *Simplified Ordering.* The inside account salesman assigned to you expedites all your orders, arranges for extra services and speeds up shipments when necessary. His personal responsibility means convenient ordering, no delays, no mistakes, nor misunderstandings.

(2) *In-stock delivery* of 16,000 specialty steel items, cut or processed to your specifications. Because warehouses maintain these stocks at high levels, you're sure of getting immediate delivery.

(3) *Metalworking assistance.* Experienced service engineers will work with your engineers to solve machining, heat treating or any other metalworking problem.

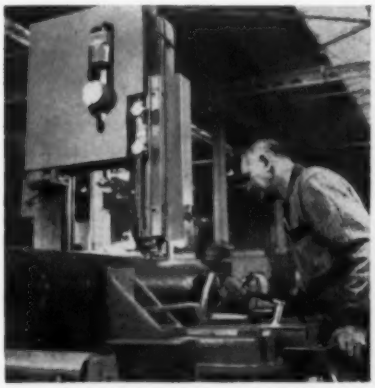
(4) *Metal research.* Crucible metallurgists visit local warehouses regularly. They'll bring the benefits of Crucible's experience and continuing research to your plant, too.

This service in depth is available because the Crucible operation is completely integrated from ore to steelmaking to warehouse delivery to you. But get full details. Ask the Crucible salesman to list all the services his warehouse offers. *Crucible Steel Company of America, Dept. PJ06, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*

STOCK LIST

Keeps you up-to-date on local stocks of specialty steels. Just ask the Crucible salesman to place your name on the regular mailing list.

One Source For All These Steels



To speed up cutting on your orders, warehouses are now equipped with the latest hacksaws, and continuous-cutting and self-aligning bandsaws.

Average local warehouse continually replenishes stocks of 16,000 specialty steel items—gives you overnight delivery on almost all.

Sales-service engineers — who specialize in tool steels, stainless, alloys— will gladly help you with any type of metalworking problem.

TOOL STEELS–Water, oil, air hardening, shock resisting, hot work, plastic and die casting steels in all forms, including bars, sheets, plates, drill rod, hollow bars, forgings and flat ground stocks

HIGH SPEED STEELS–Crucible's famous "Rex"® steels: Rex Thrift Finish rounds, hot rolled and cold drawn flats and squares, drill rod, forgings, sheets, plates, and tool bits

STAINLESS STEELS – Bars, sheet, strip, wire, cold heading wire, metalizing wire, plates, angles

FREE MACHINING STEELS – Crucible Max-el®

rounds, hexagons, plates and brake die steel

ALLOY STEELS – Bars, billets, strip and sheet

COLD ROLLED CARBON SPRING STEELS

DRILL STEELS – Hollow and solid drill steels

ALUMINUM EXTRUSION DIE STEELS

HOLLOW TOOL STEEL

WELDING AND HARD FACING ROD

PLASTIC MOLD STEELS

PERMANENT MAGNETS

– and many others

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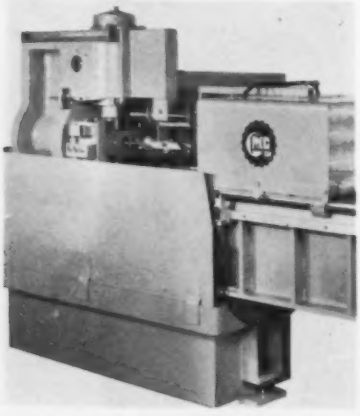
Gear, Spline Makers

This gear and spline making machine has a 6-in. capacity with a 14-ft bed. Its total weight is 16,475 lb; floor space taken is 19 ft 3 in. x 4 ft 6 in. x 6 ft 8 in. This machine, and other models like it, produces strong, accurate, smooth gear and spline shapes. Its solid, stress-relieved C-frame supports two columns. Each column supports a rotor. Each rotor supports one or



more planetary rollers. Rollers can be changed in a few minutes. Set-up from one job to another is simple. The twin rotors are driven by universal joints and synchronized by timing gears with the work spindle located on the carriage. A simple change gear arrangement provides for various divisions. Separate motors drive the twin rotors to minimige gear loads. (Grob, Inc.)

For more data circle No. 45 on postcard, p. 83

Furnaces

New molybdenum tube furnaces operate to 3000°F. Three standard sizes of single end or double end furnaces are available; special designs can be built, too. A reactor-transformer control system provides safeguards against overloading the elements and infinite temperature control. Manual controls with an optical sighting pyrometer can be supplied. A reducing atmosphere generally is used to protect the elements. However, a second nonporous tube can be supplied to protect work if necessary. When required, purge and water-jacketed cooling chambers are available to permit preheat and cooling under a controlled atmosphere. Top of furnace removes for easy access to the elements. (Hevi-Duty Electric Co.)

For more data circle No. 46 on postcard, p. 83

Heat Controller

Pneumatic acting, this recording temperature control utilizes a 15-lb air line which actuates an air-operated steam valve or other air-operated device. It comes in any of 10 optional temperature ranges within extremes of —30 to +1100°F. The unit features a 10-

in. circular chart, either electric or spring driven, for 24- or 48-hour or 7-day periods. One of the features is a readily adjustable throttling range, 3 to 20 pct. The instrument is actuated by a mercury-filled thermal element. The control varies air pressure between the control and the air-operated valve in direct proportion to temperature changes. A rise in temperature at the point being controlled is sensed by the control. It then modulates air pressure to the air-operated valve or device. Depending upon the degree to which the heat has risen, the valve restricts the supply of heating medium. The control has a built-in, fail-safe provision in its design. (The Partlow Corp.)

For more data circle No. 47 on postcard, p. 83

Barrel Finishers

A manufacturer of barrel finishing equipment has announced a compact installation for large production in limited space. Using this equipment, one operator working alone can handle as many as 18 operating barrels efficiently at one time. A centrally located jib boom provides rapid and easy handling of individual barrels between the mechanized units and unloading equipment. (Speed-D-Burr Corp.)

For more data circle No. 48 on postcard, p. 83

Furnace Cores

New electric furnace cores permit full support of coils in any furnace position. They eliminate failures due to sharp bends and arcing of conventional design. Very close temperature control is possible; this is because there's little temperature difference between the the furnace chamber and the adjacent coil. Also because there's virtually no temperature lag caused by the mass of the core. (BTU Engineering Corp.)

For more data circle No. 49 on postcard, p. 83

Welder

For end-welding studs to light gage metals, a new welder operates on a stored energy principle. It can end-weld a fastener in 0.006th of a second. Joining small studs and fasteners to various combinations of ferrous and nonferrous metals, it handles diameters to 3/16 in. Fasteners even can be welded to highly polished stainless steel, coated or enameled sheet and other metals with it—and there's no distortion,

warping, burn through, or discoloration to grain and polish. A small 2½-lb portable hand tool holds the stud and closes the circuit; this allows the welding current to discharge when it's placed against the

work surface. The unit works from either 115 v or 230 v, single phase, 60 cycle ac. The power unit weighs only 144 lb. This employs a 4-in. diam wheel for portability. (KSM Products, Inc.)

For more data circle No. 50 on postcard, p. 83

Grounding Alarm

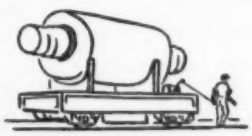
A new detector-alarm warns of accidental grounds on power lines. It's simple to operate, and easy to wire into any power system. If a grounding occurs, a red warning lamp flashes and a horn or bell sounds. These continue until a reset button is pushed, at which time the red light changes from flashing to a steady glow. It remains so until the ground is cleared. The instrument works on 25 to 400 cycles ac and dc, 1, 2 and 3 phase. Voltages available are: 120, 240, and 480-600. (Parr Mfg. Corp.)

For more data circle No. 51 on postcard, p. 83

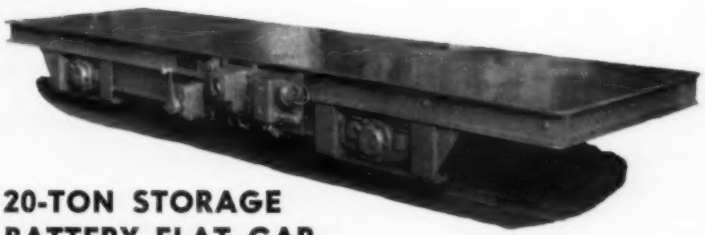
Clarification Unit

Of a new design, this gravity clarification unit provides continuous, direct flow, controlled fluid velocity. It effectively removes metallic chips and abrasive particles. This it does by carefully controlled flow velocity which allows little turbulence with plenty of time for gravity action. Retention time for proper setting is 7 to 9 minutes.

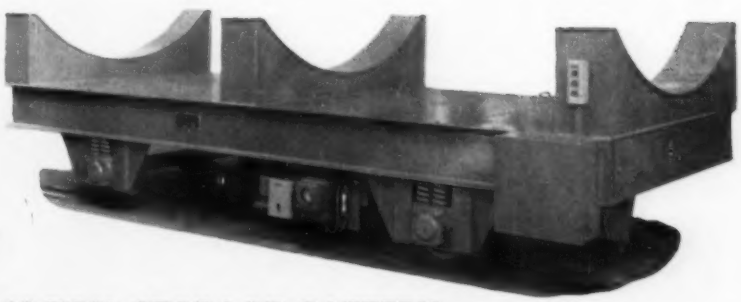
ATLAS SAFETY TYPE "SHORT HAUL" TRANSFERS



Atlas Safety-Type Transfers provide safe, low-cost service. Available with gas or diesel-electric, cable reel, or storage battery power. Atlas Transfers handle any type of load... and the heavier the load, the greater the savings.



20-TON STORAGE BATTERY FLAT CAR



20-TON STORAGE BATTERY WITH CRADLE FOR PIPE

Request "Walk-Along" Bulletin 1283

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ENGINEERS & MANUFACTURERS SINCE 1896

NEW EQUIPMENT

Filtering media isn't used in the gravity clarification unit. All particle removal is via gravity action. Flow capacities range from 20 to 1000 gpm; tank capacities, from 140 to 600 gal. (Indiana Commercial Filters Corp.)

For more data circle No. 52 on postcard, p. 83

Electrostatic Spray

Development of a centrifugal multiple-color electrostatic spray system has been announced. The new system adapts to producing both single color and multi-color patterns or finishes. It utilizes an array of variable speed electrostatically charged centrifugal atomizers; these blend coating materials to produce various types of multicolor mixed patterns. Reciprocating and stationary models are available. (Ionic Electrostatic Corp.)

For more data circle No. 53 on postcard, p. 83

Router

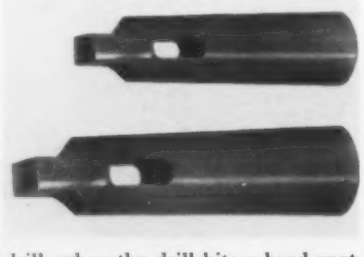
Two new heavy-duty routers include a ⅞-hp unit with a speed of 23,000 rpm, and a 1¼-hp one with a speed of 27,000 rpm. Each has a spotlight for illuminating its working area. A safe switch-shaft lock on each has a three-position recessed switch. This starts and stops the router and automatically locks the shaft. One wrench is all that's needed to change bits and cutters in perfect safety. A quick clamp has positive hold, simple, safe and convenient. This allows a clamping lever to hold or release the motor in router base with a flip of a finger

(more than 1000 lb of pressure). Depth of settings can be as fine as 0.004 in. or less. (Stanley Works).

For more data circle No. 54 on postcard, p. 83

Drill Sleeve

Of virgin du Pont nylon, this sleeve eliminates drill breakage. It protects spindles and quills from damage. The sleeve breaks, not the



drill, when the drill hits a hard spot or air hole and stops. The sleeve is guaranteed to meet or exceed accepted drill sleeve standards of accuracy. It will not score spindles, doesn't bind, isn't subject to damage by electrolytic corrosion, is unaffected by coolants, oil, gasoline or grease. Absorbing heavy shock and vibration, it's produced in Morse taper sizes 1-2, 2-3, 3-4, 4-5. (James Products Co.)

For more data circle No. 55 on postcard, p. 83

Countersink

Fully adjustable micrometer-stop countersinks are available. These fast-cutting, lightweight hand tools also may be used for volume production work on drill presses, lathes, millers or wherever chucking is available. The countersinks feature hardened and cylindrically ground steel alloy shafts operating within extra large self-lubricating bearings. Final cut accuracy is within ±0.001 in. They come in ⅜- to 1½-in. sizes, five standard angles. (Schrillo Aero Tool Engineering Co.)

For more data circle No. 56 on postcard, p. 83

Box Furnace

A new high-temperature atmosphere box furnace provides heavy, continuous duty at all heat levels up to 2500°F. It also handles short or intermittent runs to 2700°F. Heating elements are of non-metallic silicon carbide. This compact unit, with a clear working area 6-in. wide x 12-in. deep x 5-in. high, comes complete with all components pre-wired and piped. The fur-

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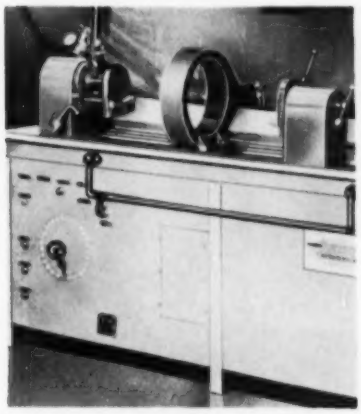
nace chamber is protected by an automatic flame curtain which ignites when the furnace door begins to open. (Lindberg Engineering Co.)
For more data circle No. 57 on postcard, p. 83

Magnetic Inspection

Magnetic particle inspection equipment and supplies in a new line have many features. The equipment is designed to meet critical inspection demands. Positive identification of defects, speed of processing time, and ease of operation are important benefits of this equipment. It's said to meet industry and military requirements. The crack and flaw finders come in portable and booth models for nondestructive testing of ferrous materials. (Peterson Machine Tool, Inc.)



For more data circle No. 58 on postcard, p. 83

New Alloys

Four new titanium alloys have been announced by a major producer. Primarily for aircraft and missile use, they're results of three years of intensive study. They include: (1) A 2½-pct aluminum, 16-pct vanadium material works easily in a low strength condition (about 65,000 psi). It age-hardens to 200,000 psi. (2) An 8-pct aluminum, 2-pct columbium, 1-pct tantalum alloy is extremely arc-weldable. Yet, it retains high ultimate tensile strength, good ductility. Useful temperature range is said to be beyond the normal by 150° at least. (3) An experimental metal has high strength in the annealed condition, needing no additional heat treatment. When age hardened, it reaches 260,000-psi ultimate tensile strength. (4) A 3-pct aluminum, 2½-pct vanadium alloy is specifically designed for high-strength tubing. (Mallory - Sharon Metals Corp.)

For more data circle No. 59 on postcard, p. 83

Air Valve

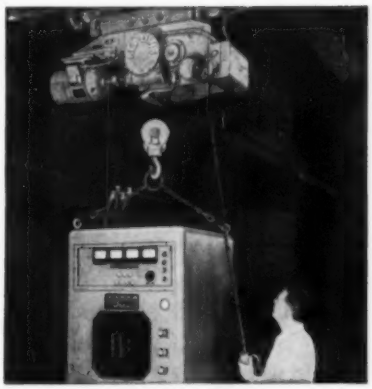
Cycling tests for new solenoids have passed the 100-million mark; they are still going without being touched. Featuring waterproof coils, these new units are now incorporated on one maker's standard four-way valves. This means these valves can meet ever increasing demands of automatic production machines for fast cycling, uninterrupted and dependable air valve operation. (Barksdale Valves)

For more data circle No. 60 on postcard, p. 83

Magnetic Conveyor

Nails defy gravity on this conveyor. With help from magnetic force and a new, grooved, rubber belt, this conveyor serves a nail-making machine four times longer than belts previously used. The 6-in. wide belt has inverted V-shaped flexible ribs. These provide a foothold to support nails during their nearly vertical climb from nail-making machine to cart. The belt glides over a magnetic bed created within the "Rapistan" conveyor system to help hold nails in place. (B. F. Goodrich Industrial Products Co.)

For more data circle No. 61 on postcard, p. 83



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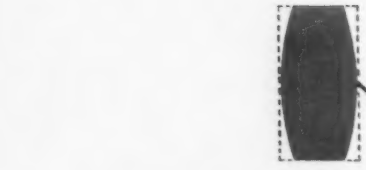
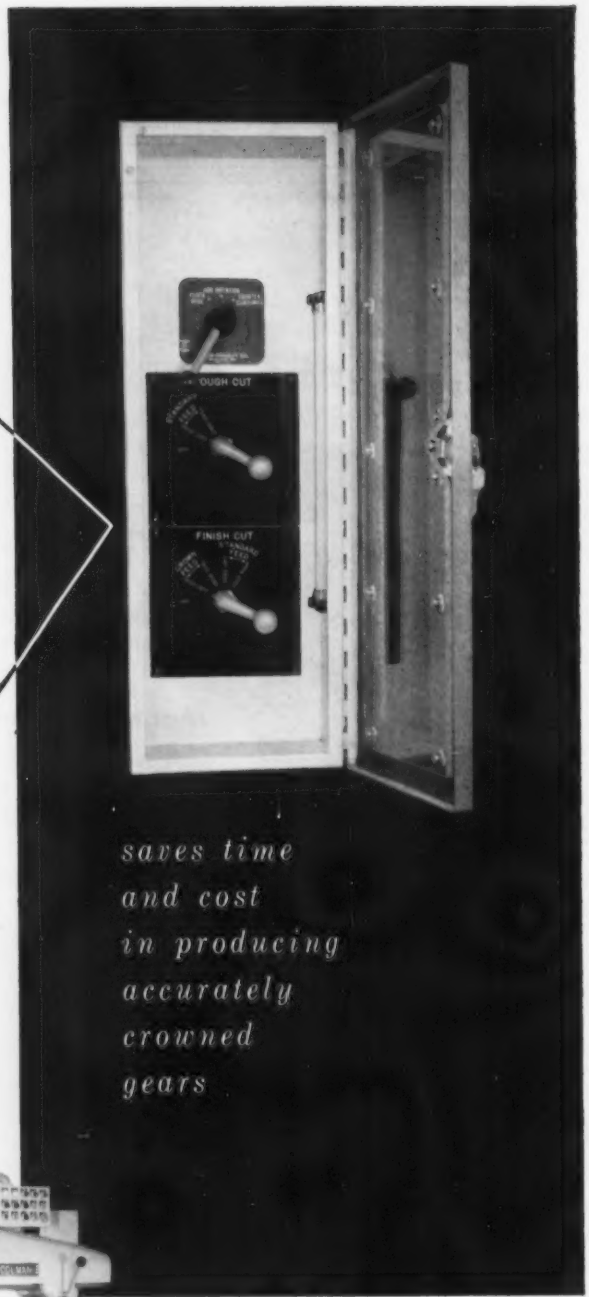
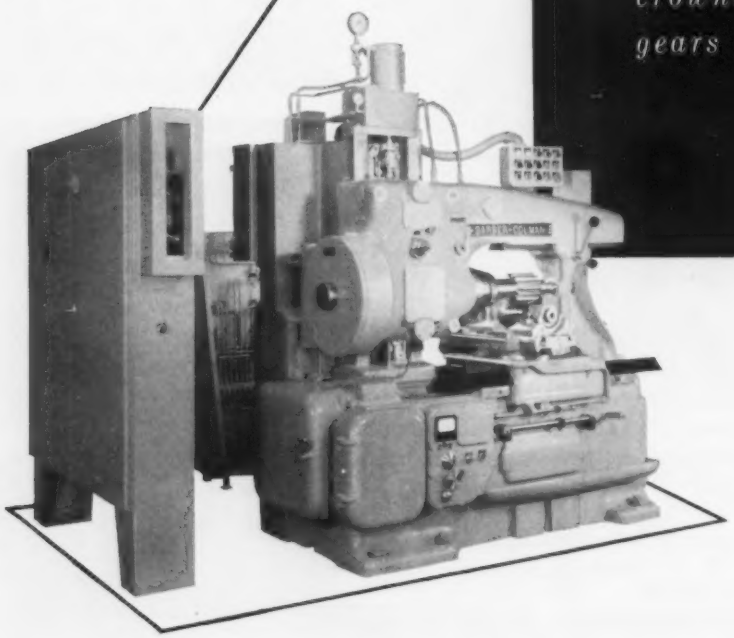


crown hobbing

with automatic cycle selection



saves time and cost in producing accurately crowned gears



Fairfield Manufacturing Company, LaFayette, Indiana, is crown-hobbing coarse pitch pinions on this special Barber-Colman No. 14-15 Hobbing Machine. Crown-hobbing is a new method for generating crowned gear teeth. Whether shaving is required after crown-hobbing depends solely upon the finish required. If the hobbed finish is satisfactory, shaving can be eliminated. If shaving is required to produce the desired finish, crown-hobbing allows uniform stock removal by the shaving cutter, resulting in reduced production time and increased shaving cutter life.

This machine, especially designed and built for crown-hobbing, may also be used for standard gear hobbing. A choice of automatic cycles is available through settings on the control panel, including hobbing at constant depth and finish crown-hobbing, rough and finish hobbing without a crown, or single cut hobbing with or without a crown, feeding either left or right with climb or conventional cutting.

On the job shown here, Fairfield Manufacturing Company is crown-hobbing 3 D.P. pinions, 14T, 20° P.A., with 5½″ face and .008″ change in tooth thickness. The automatic cycle includes rough hobbing at constant depth and finish crown-hobbing. In cycling, the machine completes the conventional roughing cut, work slide raises, hob returns to starting position, and work slide lowers to finished depth against the crowning cam. The gear is crown-hobbed at a constantly changing depth, as controlled by the crowning cam, work slide raises, hob returns to starting position, and cycle stops for reloading. Cycle pattern and type of feed are selected by levers on the control panel as shown.

The machine may be designed to suit special job requirements, either as a single-purpose machine, or with the universal feature, as in this case, for both crown and standard gear hobbing. A cam and change gear mechanism for crown-hobbing is provided in the design of the machine for raising and lowering the work slide during the cycle to produce a change in tooth thickness. The work slide is held against the rotary cam by hydraulic pressure in addition to its own weight. Change gears are provided in the cam drive so that different amounts of change in tooth thickness can be produced with the same cam. Different cams can be designed when a different tooth crown configuration is required.

Crown-hobbing also makes it possible to hold a change in tooth thickness within the desired limits, and the tooth bearing can be located at the most desirable point consistent with job conditions.

We welcome your inquiries on crown-hobbing and suggest you send us drawings of your crowned-gears. Our engineers will analyze the job conditions and make recommendations for crown-hobbing. If analysis shows a practical application for crown-hobbing, we shall be glad to cut samples in our laboratory for your approval.

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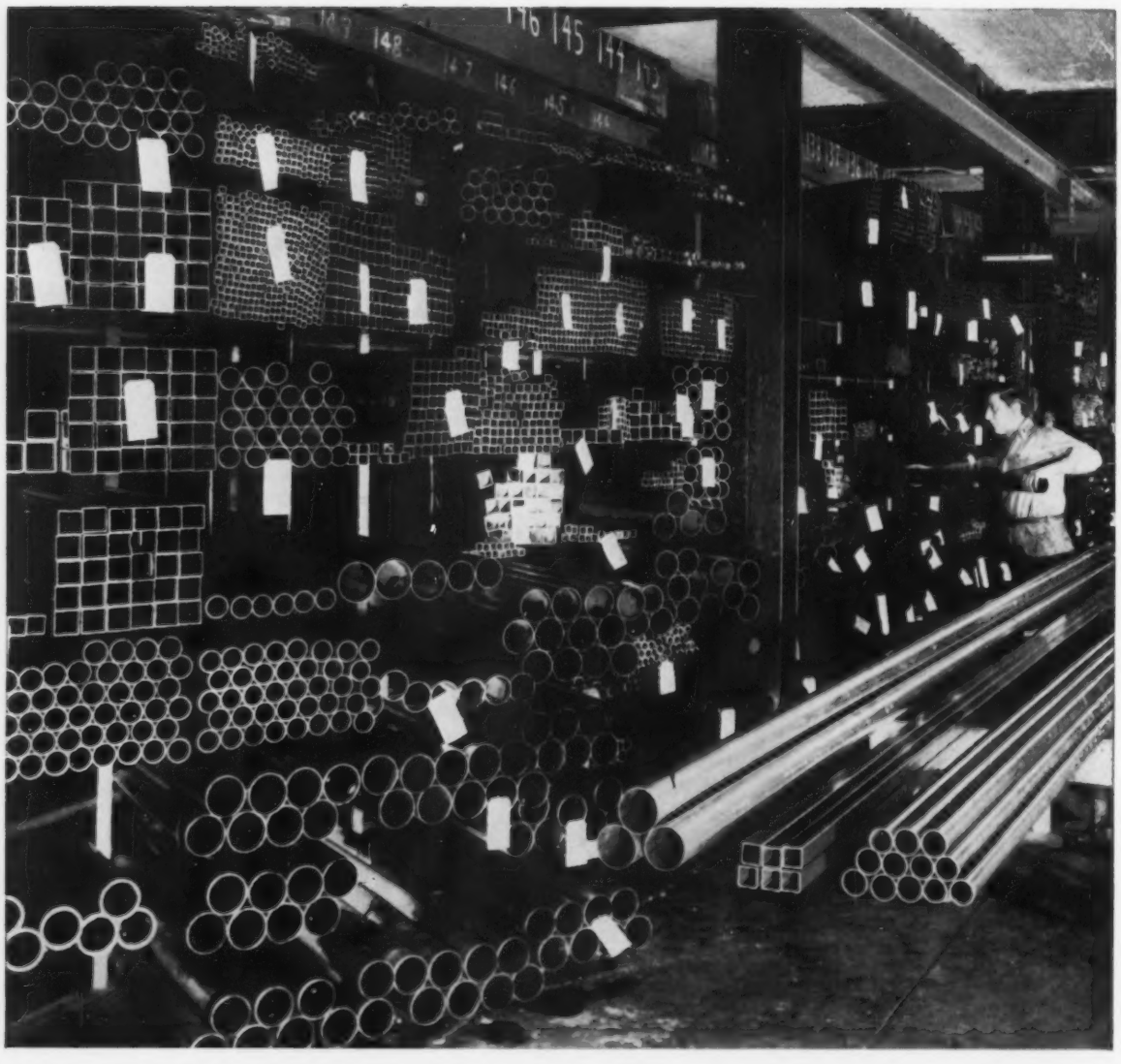

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The Iron Age Summary

Market Nearing Critical Point

Sheet and strip supplies could easily grow tight as a drum during the next month.

A real shortage in any product is unlikely this year. But keep an eagle eye open during 1959.

▪ The steel market comeback is nearing a critical point. Supplies of sheet and strip could become tight as a drum in some areas during the next month. A lot depends on how well the new cars go over with the public. Should the auto companies step up their buying, flat-rolled products would be harder to come by.

A Midwestern mill actually was relieved when General Motors Corp. asked that steel deliveries be held up for two weeks due to scattered strikes over local issues. "I wish it had been four weeks," a sales executive commented.

GM Output Lags—GM reportedly will be 200,000 units behind schedule at the end of October. Sooner or later, this lost output will have to be made up. Many GM dealers had only a few cars on hand before the strikes began.

The sheet and strip market is not so tight countrywide as it is in certain areas of the Midwest. But steel users tend to reach farther out when mills close to home lengthen delivery promises. Eventually all mills are affected.

Galvanized Hot—Hot and cold-rolled bars also are in better demand. Tubular products are picking up. Galvanized sheet and aluminized sheet are about the hottest products from a demand standpoint. Chicago area mills are running two-to-four weeks behind on galvanized sheet delivery promises.

Meanwhile, signs are growing that some steel users already are ordering farther ahead as a hedge against a tighter market next year. One large company has placed plate orders for delivery through next March. Other users are quietly adding to their inventories as their own business improves.

No Shortage in '58—A real shortage in supply of any steel product is unlikely; at least for this year. Demand for structural shapes, linepipe, oil country goods, and plate still leaves something to be desired.

Even without much support from these heavier products, industry operations are still moving up. Indications are that production could easily hit 85 pct of capacity—or more—before expected leveling off in December. One large mill looks for an improvement after turn of the year that will push its operations to near-100 pct of capacity in the first quarter.

'59 Outlook Good—The market probably will get a lift in first and second quarters from the railroads and the oil and gas industry. Not to be overlooked, either, is the probability of some hedge buying against a possible strike in steel next year.

Steel Output, Operating Rates

Production	This Week	Last Week	Month Ago	Year Ago
(Net tons, 000 omitted)	2,025	2,011	1,809	2,061
Ingot Index				
(1947-1949=100)	126.0	125.1	112.5	128.3
Operating Rates				
Chicago	87.0	85.0*	80.0	80.0
Pittsburgh	69.0	68.0	60.5	81.0
Philadelphia	77.0	77.0	73.0	88.0
Valley	60.0	57.0*	49.5	67.0
West	76.5	74.5*	77.5	85.0
Cleveland	80.0	79.0*	69.0	94.0
Buffalo	78.0	78.0	59.0	100.0
Detroit	76.0	79.0	67.0	94.0
South	63.5	66.0	54.0	71.5
South Ohio River	77.0	81.0*	75.0	86.0
Upper Ohio River	85.0	82.0	77.5	72.5
St. Louis	90.0	101.0*	88.0	90.0
Aggregate	75.0	74.5	67.0	80.5

*Revised

Prices At a Glance

(Cents per lb unless otherwise noted)	This Week	Week Ago	Month Ago	Year Ago
Composite price				
Finished Steel, base	6.196	6.196	6.196	5.967
Pig Iron (gross ton)	$66.41	$66.41	$66.41*	$66.42
Scrap, No. 1 hvy (Gross ton)	$42.83	$42.50	$43.17	$35.33
No. 2 bundles	$28.83	$28.50	$29.17	$26.33
Nonferrous				
Aluminum ingot	26.80	26.80	26.80	28.10
Copper, electrolytic	27.50	27.50	26.50	27.00
Lead, St. Louis	12.80	12.30	10.80	13.30
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	96.50	95.75*	95.625	91.25
Zinc, E. St. Louis	11.00	11.00	10.00	10.00

Gear Deliveries May Stretch Out

Buyers of gearing are giving manufacturers an increasing number of rush orders.

Shipping demands are being met now, but a delivery stretch-out may be coming.

▪ Gear buyers may soon find that manufacturers' deliveries are stretching out. They may discover their favorite supplier has finally been buried beneath a growing flood of rush-rush ordering coming from about every segment of U. S. industry.

Most gear manufacturers will state flatly that they've had no booming business increase in second half. There've been gains in the number of new orders received in the last 45 days.

General business volume has been moving up at a slow pace. But none of these things have been in enough strength to force the gear manufacturer to extend deliveries.

More Rush Buying—Small manufacturers working on job lots of gears in relatively small quantities can still, for instance, give 2-3 week delivery. Gear manufacturing plants quote as low as one week and as much as four weeks on delivery of cast iron gears. Steel gears may run longer, but even here delivery still falls within the historic 8-12 week range.

The fly in the ointment is the growing demand for immediate delivery of the entire order on a rush-rush basis. A buyer may order 300 units, enough to last him three months, but for some reason he wants the entire lot of 300 delivered immediately.

Word of Advice—One large gear producer learned recently that one of his major accounts wanted gears scheduled originally for October-November production before the end of the first two weeks in October. Gearmakers' advice to buyers: Don't let the low backlog at most gear shops fool you. If this wave of rush buying continues, the careful buyer will do well to see that his late fourth quarter gear requirements are placed on producers books at an early date.

Belting Price Rise?—Belting may produce another kind of surprise, but one that could be even more unpleasant. Until now, rumors of price increases have been just that —rumors. Now, a few old hands in belting industry say if an increase in belting prices come, it will be within the next 30 days. Fresh rumors are coming thick and fast, and at least one manufacturer has already boosted prices.

Like the gear manufacturer, the belting producer isn't being swamped with booming business. The rate of gain may run in the neighborhood of 5 pct a month. Again the difficulty is that an extremely high percentage of the orders being received are on a rush basis.

Watch Out — Gear and belting makers could still use more business. They have been able to fill rush delivery demands until now. But they are extending a little to do it. Their own business is picking up. They are getting some large government orders. All this might add up to a healthy stretchout in deliveries by late November or early December.

TRIPLE REDUCTION: Helical gear drive produced by Foote Bros. Gear and Machine Corp. has triple reduction, parallel shaft, and transmits 1500 hp. All steel construction was used for both case and gears.

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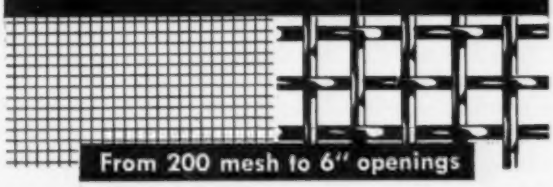

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USS Again Revises Jobber Discounts

National Tube Div. is making another move to untangle the problem of discounts to pipe jobbers.

Dealers will now get a 3 pct discount on both direct shipments to buyers and those into jobber stocks.

■ Pipe jobbers are being offered a 3 pct discount on shipments they buy for stock from the National Tube Div. of U. S. Steel

National Tube's move is the latest attempt to straighten out the tangled problem of discounts to pipe jobbers. Several years ago pipe mills discontinued a 5 pct allowance to jobbers on shipments into stock. Earlier this year they reduced the discount on direct shipments from 5 pct to 3 pct. (See The IRON AGE, Sept. 18, p. 50).

The new move by National Tube would establish a written agreement between the mill and the jobber. Jobber would pay a single price, whether pipe went into his inventory or was shipped direct from mill to customer.

It should destroy any incentive for the jobber to divert direct shipments into stock. And it should give the jobber more reason to concentrate on out of stock sales.

National Tube is also offering jobbers a commission of $6 a ton on some linepipe orders. Here's the plan: On jobber sales of double random length seamless and electricweld linepipe, the mill would handle billing directly with customer. Then mill would pay jobbers their commission. Chances for discount splitting between jobbers and buyers would be reduced.

Other pipe producers say they will remain competitive with National Tube, but have not announced similar discount schedules.

Fastener Pricing — Pittsburgh Screw & Bolt Corp. is proposing to customers a new system of fastener pricing. List and discount pricing, currently in use, would be replaced by net pricing.

In addition, there would no longer be freight variables on truckload and carload quantity shipments. Now a purchaser must compute net price from list price and discount schedules, then compare freight charges from various producers.

Pittsburgh Screw and Bolt leans toward a uniform delivered price on truckload and carload lots which would apply at all points.

"A purchasing agent's nightmare has developed for nut and bolt customers," says Donn D. Greenshields, president of Pittsburgh Screw & Bolt. "Our industry needs a price list that the customer can easily understand (without) depending on crews of bookkeepers to figure out. Net pricing should be a step in that direction."

Sheet and Strip—Signs of a rapidly tightening market are multiplying. Buyers in some areas are trying to move shipments up about two weeks. Early November tonnage, for example, is wanted during October. Both hot and cold-rolled sheet are being booked heavily for December in the **Midwest.** There and elsewhere galvanized and aluminized sheet remain in heavy demand.

While other users are pushing tonnages up, some auto steel buyers are deferring shipments about two weeks. But this is only a temporary setback, while localized auto shutdowns are being settled.

Plates and Shapes—A few **Eastern** plate buyers have already placed their first quarter orders. But this is hardly enough to boost a slow market. Mills in the area are picking up some orders from Canadian buyers still strikebound. But **East Coast** mills are even getting competition from Japanese producers. They recently lost a large order for naval ship plate to a Japanese mill.

In the **Midwest** steel salesmen expect the approaching end of the building season will further slow plate and structural orders.

Pipe and Tubing — Oil country seamless is beginning to show a little life. A few pipe jobbers are placing rush orders. November orders are also better. Mills say it's the first really strong advance booking they've had all year. Despite scattered gains for linepipe sales in the **Midwest** that market remains dull. Standard pipe orders are showing marked improvement.

Pig Iron—Producers report sales are continuing the upward advance begun in August. October orders are the best for any month since November, 1957. Further gains are expected in November. And December may be the strongest month this year. Further market improvement is predicted for the first quarter of 1959.

PURCHASING AGENT'S CHECKLIST

Fourth quarter steel buying proceeds at orderly pace. However, spurt of scare buying could touch off shortage. **P. 24**

Copper marketers optimistic but industry has some question marks keeping it alert. **P. 26**

Instrument sales are over their slump, may be headed toward an all-time high. **P. 28**

COMPARISON OF PRICES

(Effective Oct. 21, 1958)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in **Heavy Type**; declines appear in *Italics*.

	Oct. 21 1958	Oct. 14 1958	Sept. 23 1958	Oct. 22 1957
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	5.10¢	5.10¢	5.10¢	4.925¢
Cold-rolled sheets	6.275	6.275	6.275	6.05
Galvanized sheets (10 ga.)	6.875	6.875	6.875	6.60
Hot-rolled strip	5.10	5.10	5.10	4.925
Cold-rolled strip	7.425	7.425	7.425	7.17
Plate	5.30	5.30	5.30*	5.12
Plates, wrought iron	13.55	13.55	13.55	13.15
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	52.00
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	$10.30	$10.30	$10.30	$10.30
Tin plates, electro (0.50 lb.)	9.00	9.00	9.00	9.00
Special coated mfg. ternes	9.55	9.55	9.55	9.55
Bars and Shapes: (per pound)				
Merchant bar	5.675¢	5.675¢	5.675¢	5.425¢
Cold finished bar	7.65	7.65	7.65	7.30
Alloy bars	6.725	6.725	6.725	6.475
Structural shapes	5.50	5.50	5.50	5.275
Stainless bars (No. 302)	45.00	45.00	45.00	45.00
Wrought iron bars	14.90	14.90	14.90	14.45
Wire: (per pound)				
Bright wire	8.00¢	8.00¢	8.00¢	7.65¢
Rails: (per 100 lb.)				
Heavy rails	$5.75	$5.75	$5.75	$5.525
Light rails	6.725	6.725	6.725	6.50
Semifinished Steel: (per net ton)				
Rerolling billets	$80.00	$80.00	$80.00	$77.50
Slabs, rerolling	80.00	80.00	80.00	77.50
Forging billets	99.50	99.50	99.50	96.00
Alloy blooms, billets, slabs	119.00	119.00	119.00	114.00
Wire Rods and Skelp: (per pound)				
Wire rods	6.40¢	6.40¢	6.40¢	6.15¢
Skelp	5.05	5.85	5.85	4.875
Finished Steel Composite: (per pound)				
Base price	6.196¢	6.196¢	6.196¢	5.967¢

	Oct. 21 1958	Oct. 14 1958	Sept. 23 1958	Oct. 22 1957
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$70.57	$70.57	$70.57*	$70.51
Foundry, Southern Cin'ti	73.87	73.87	73.87	71.65
Foundry, Birmingham	62.50	62.50	62.50	62.50
Foundry, Chicago	66.50	66.50	66.50	66.50
Basic, del'd Philadelphia	70.07	70.07	70.07*	70.01
Basic, Valley furnace	66.00	66.00	66.00	66.00
Malleable, Chicago	66.50	66.50	66.50	66.50
Malleable, Valley	66.50	66.50	66.50	66.50
Ferromanganese 74-76 pct Mn, cents per lb‡	12.25	12.25	12.25	12.25
Pig Iron Composite: (per gross ton)				
Pig iron	$66.41	$66.41	$66.41*	$66.42
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$45.50	$44.50	$44.50	$35.50
No. 1 steel, Phila. area	40.50	40.50	39.50	37.00
No. 1 steel, Chicago	42.50	42.50	45.50	33.50
No. 1 bundles, Detroit	35.50	35.50	36.50	25.50
Low phos., Youngstown	46.50	45.50	45.50	35.50
No. 1 mach'y cast, Pittsburgh	51.50	51.50	51.50	52.50
No. 1 mach'y cast, Phila.	49.50	49.50	49.50	50.50
No. 1 mach'y cast, Chicago	53.50	53.50	53.50	41.50
Steel Scrap Composite: (per gross ton)				
No. 1 hvy. melting scrap	$42.83	$42.50	$43.17	$35.33
No. 2 bundles	28.83	28.50	29.17	26.33
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.50	$14.50	$14.50	$15.38
Foundry coke, prompt	$18-18.50	$18-18.50	$18-18.50	$17.50-$19
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	27.50	27.50	26.50	27.00
Copper Lake, Conn.	27.50	27.50	26.50	27.00
Tin, Straits, N. Y.	96.50†	95.75*	92.375	91.25
Zinc, East St. Louis	11.00	11.00	10.00	10.00
Lead, St. Louis	12.80	12.30	10.80	13.30
Aluminum, virgin ingot	26.80	26.80	26.80	28.10
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	33.00

† Tentative. ‡ Average. * Revised.

Finished Steel Composite

Weighed index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite:

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap Composite

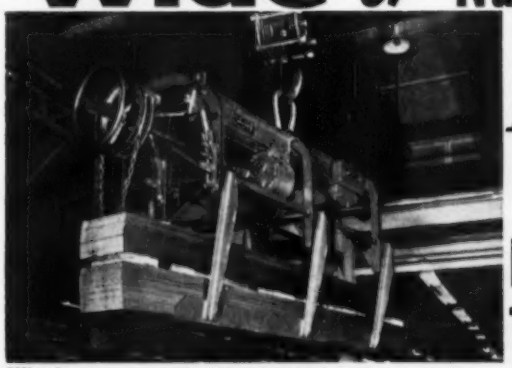
Averages of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

INDEX TO PRICE PAGES

Prices At a Glance 101
Comparison of Prices 105
Bars 112
Billets, Blooms and Slabs 110
Boiler Tubes 114
Bolts, Nuts, Rivets, Screws 115
Clad Steel 114
Coke 114
Electrical Sheets 114
Electrodes 114
Electroplating Supplies 115
Ferroalloys 117
Iron Ore 114
Merchant Wire Products 114
Metal Powders 115
Nonferrous
- Mill Products 109
- Primary Prices 105-109
- Remelted Metals 109
- Scrap 109

Piling 110
Pig Iron 116
Pipe and Tubing 113
Plates 112
Rails 114
Refractories 114
Service Center Prices 115
Shapes 110
Sheets 111
Spring Steel 114
Stainless 116
Steel Scrap 107
Strip 110
Structurals 110
Tinplate 111
Tool Steel 114
Track Supplies 114
Water Pipe Index 115
Wire 112
Wire Rod 111

Wide or Narrow...



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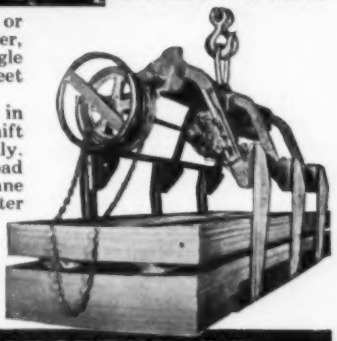

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Market in Balance, Prices Hold Firm

Scrap is moving at a healthy rate but no runaway market is in sight.

The counter pressures are strong enough to hold prices in check.

• The scrap market appears to be in the first "normal" period it has seen in many months.

Since August, The IRON AGE Composite Price has been fluctuating in the $42-$44 range. It's at a level where dealers seem willing to sell and mills are not too reluctant to buy. No runaway market is in sight, but, on the other hand, no one looks for the bottom to drop out, either.

Behind the leveling off are several forces and counter-forces. Pressure for higher prices is due mainly to the increasing mill operating rate. Added to this is the slow intake of good scrap by dealer yards.

Offsetting these upward pressures are three equally formidable downward influences. One is the gradually increasing industrial scrap generating rate. Secondly, mill scrap inventories are still at comfortable levels. Third, many blast furnaces are still idle.

For the market to break upward sharply, scrap men agree that the nation's big mills would have to come into the market for large tonnages. Purchases by the big mills in recent weeks have been sporadic and no one expects a sudden move by them in the near future.

One of these sporadic purchases by a Pittsburgh mill last week brought a $1 increase in openhearth scrap prices in that district and boosted The IRON AGE heavy melting Composite Price 33¢ to $42.83.

Pittsburgh — Prices of dealer openhearth grades are up $1 on strength of broker bidding and scattered mill buying. One mill paid $47 for a special grade of No. 1 heavy melting. No. 2 bundles are the weakest of the openhearth grades but are still up $1 on the basis of mill buying. There are still no tonnage orders. Mills and yards are $2-$3 apart in their price thinking. Dealers are optimistic even though mills are pushing blast furnaces and shipping pig iron in an effort to hold down scrap consumption.

Chicago—The market is holding steady at current price levels. Dealer prices are advancing and brokers were reported paying as much as $43 to cover existing heavy melting and dealer bundle orders. The entire market list displays dealer pressure for stronger price levels. Sole exception was a slight downward movement in electric furnace grades.

Philadelphia—Prices are holding firm after last week's slight dip. One nearby mill is expected to come into the market momentarily. While dealers are expected to reject lower-than-going price offers, there seems little doubt that a consumer can get all the material it wants at quoted prices.

New York—Steelmaking grades are off $2 a ton, except for No. 2 bundles which is unchanged. Dip is attributed to a lull in both export orders and domestic buying. But dealers and brokers feel it is only a temporary setback. Selected grades of turnings and stainless are up on increased buying.

Detroit—"Watchful waiting" has set in here as the industry waits to see what effect labor peace will have on scrap generation and demand. Industrial lists close next week, reducing trading this week to a minimum.

Cleveland—Market is slow with no new sales. Outlook hinges on two opposed factors. Operating rate is still rising and mills should run short of hot metal soon. But auto plants in this area are now pouring out bundles and a heavy October production month is expected.

St. Louis—Market remains steady at unchanged prices. Favorable weather conditions have increased yard intake.

Birmingham — Brokers are still covering recent sales. While dealers are willing to sell limited amounts of scrap, attempts by brokers to increase profit margins have met with little success. Most dealers are bullish.

Cincinnati — End-of-the-month lull has set in but outlook for next month is optimistic. Area mills are expected to buy regular quantities, probably at slightly higher prices.

Buffalo—Dealers are shipping on old orders but there is general feeling of optimism. The reason: A sharp increase in local mill operating rate. Mill inventories are high.

Boston — No. 2 bundles and heavy breakable cast grades, dropped $1 in a quiet market. Other prices are holding steady.

West Coast—Very little scrap is moving in this district. Prices are expected to remain at current low levels until mills start buying.

Houston—This market has softened a trifle and is expected to continue its status quo for several more weeks. Mill purchases next month aren't expected to be as as big as this month, which saw the largest volume since last March.

SCRAP PRICES *(Effective Oct. 21, 1958)*

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	45.00 to 46.00
No. 2 hvy. melting	35.00 to 36.00
No. 1 dealer bundles	45.00 to 46.00
No. 1 factory bundles	48.00 to 49.00
No. 2 bundles	32.00 to 33.00
No. 1 busheling	45.00 to 46.00
Machine shop turn.	20.00 to 21.00
Shoveling turnings	24.00 to 25.00
Cast iron borings	24.00 to 25.00
Low phos. punch'gs plate	48.00 to 49.00
Heavy turnings	34.00 to 35.00
No. 1 RR hvy. melting	47.00 to 48.00
Scrap rails, random lgth.	54.00 to 55.00
Rails 2 ft and under	57.00 to 58.00
RR specialties	52.00 to 53.00
No. 1 machinery cast.	51.00 to 52.00
Cupola cast.	44.00 to 45.00
Heavy breakable cast.	42.00 to 43.00
Stainless	
18-8 bundles and solids	225.00 to 230.00
18-8 turnings	125.00 to 130.00
430 bundles and solids	125.00 to 130.00
410 turnings	50.00 to 60.00

Chicago

No. 1 hvy. melting	$42.00 to $43.00
No. 2 hvy. melting	37.00 to 38.00
No. 1 dealer bundles	43.00 to 44.00
No. 1 factory bundles	46.00 to 47.00
No. 2 bundles	29.00 to 30.00
No. 1 busheling	42.00 to 43.00
Machine shop turn.	21.00 to 22.00
Mixed bor. and turn.	23.00 to 24.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	22.00 to 23.00
Low phos. forge crops	52.00 to 53.00
Low phos. punch'gs plate	48.00 to 49.00
Low phos. 3 ft and under	46.00 to 47.00
No. 1 RR hvy. melting	48.00 to 49.00
Scrap rails, random lgth.	53.00 to 54.00
Rerolling rails	64.00 to 65.00
Rails 2 ft and under	59.00 to 60.00
Angles and splice bars	55.00 to 56.00
RR steel bar axles	71.00 to 72.00
RR couplers and knuckles	52.00 to 53.00
No. 1 machinery cast	53.00 to 54.00
Cupola cast.	47.00 to 48.00
Heavy breakable cast.	41.00 to 42.00
Cast iron wheels	41.00 to 42.00
Malleable	57.00 to 58.00
Stove plate	44.00 to 45.00
Steel car wheels	51.00 to 52.00
Stainless	
18-8 bundles and solids	215.00 to 220.00
18-8 turnings	125.00 to 130.00
430 bundles and solids	115.00 to 120.00
430 turnings	65.00 to 70.00

Philadelphia Area

No. 1 hvy. melting	$40.00 to $41.00
No. 2 hvy. melting	36.00 to 37.00
No. 1 dealer bundles	40.00 to 41.00
No. 2 bundles	24.00 to 25.00
No. 1 busheling	40.00 to 41.00
Machine shop turn.	20.00 to 21.00
Mixed bor. short turn.	20.00 to 21.00
Cast iron borings	20.00 to 21.00
Shoveling turnings	24.00 to 25.00
Clean cast. chem. borings	32.00 to 33.00
Low phos. 5 ft and under	43.00 to 44.00
Low phos. 2 ft, punch'gs	44.00 to 45.00
Elec. furnace bundles	42.00 to 43.00
Heavy turnings	33.00 to 35.00
RR specialties	47.00 to 48.00
Rails 18 in. and under	57.00 to 58.00
Cupola cast.	40.00 to 41.00
Heavy breakable cast.	42.00 to 43.00
Cast iron car wheels	44.00 to 45.00
Malleable	56.00 to 57.00
No. 1 machinery cast.	49.00 to 50.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$37.50 to $38.50
No. 2 hvy. melting	32.50 to 33.50
No. 1 dealer bundles	37.50 to 38.50
No. 2 bundles	25.00 to 26.00
Machine shop turn.	18.00 to 19.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	18.00 to 19.00
Low phos. 18 in. and under	45.00 to 46.00
Rails, random length	49.00 to 50.00
Rails, 18 in. and under	55.00 to 56.00
No. 1 cupola cast.	44.00 to 45.00
Hvy. breakable cast.	36.00 to 37.00
Drop broken cast.	47.00 to 48.00

Youngstown

No. 1 hvy. melting	$44.00 to $45.00
No. 2 hvy. melting	36.00 to 37.00
No. 1 dealer bundles	44.00 to 45.00
No. 2 bundles	32.00 to 33.00
Machine shop turn.	21.50 to 22.50
Shoveling turnings	26.00 to 27.00
Low phos. plate	46.00 to 47.00

Cleveland

No. 1 hvy. melting	$41.00 to $42.00
No. 2 hvy. melting	32.50 to 33.50
No. 1 dealer bundles	41.00 to 42.00
No. 1 factory bundles	43.50 to 44.50
No. 2 bundles	28.50 to 29.50
No. 1 busheling	41.00 to 42.00
Machine shop turn.	18.00 to 19.00
Mixed bor. and turn.	23.00 to 24.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	23.00 to 24.00
Cut structural & plates, 2 ft & under	47.00 to 48.00
Drop forge flashings	41.00 to 42.00
Low phos. punch'gs plate	43.00 to 44.00
Foundry steel, 2 ft & under	40.00 to 41.00
No. 1 RR hvy. melting	44.00 to 45.00
Rails 2 ft and under	56.00 to 57.00
Rails 18 in. and under	57.00 to 58.00
Steel axle turnings	25.00 to 26.00
Railroad cast.	50.00 to 51.00
No. 1 machinery cast.	49.00 to 50.00
Stove plate	45.00 to 46.00
Malleable	61.00 to 62.00
Stainless	
18-8 bundles	220.00 to 225.00
18-8 turnings	115.00 to 120.00
430 bundles	120.00 to 125.00

Buffalo

No. 1 hvy. melting	$36.00 to $37.00
No. 2 hvy. melting	29.00 to 30.00
No. 1 busheling	36.00 to 37.00
No. 1 dealer bundles	36.00 to 37.00
No. 2 bundles	27.00 to 28.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	18.00 to 19.00
Shoveling turnings	22.00 to 23.00
Cast iron borings	16.00 to 17.00
Low phos. plate	40.00 to 41.00
Structurals and plate, 2 ft and under	45.00 to 46.00
Scrap rails, random lgth.	47.00 to 48.00
Rails 2 ft and under	59.00 to 60.00
No. 1 machinery cast.	48.00 to 49.00
No. 1 cupola cast.	44.00 to 45.00

St. Louis

No. 1 hvy. melting	$38.00 to $39.00
No. 2 hvy. melting	36.00 to 37.00
No. 1 dealer bundles	40.00 to 41.00
No. 2 bundles	29.00 to 30.00
Machine shop turn.	16.00 to 17.00
Shoveling turnings	18.00 to 19.00
No. 1 RR hvy. melting	45.00 to 46.00
Rails, random lengths	48.00 to 49.00
Rails, 18 in. and under	53.00 to 54.00
Angles and splice bars	46.00 to 47.00
RR specialties	47.00 to 48.00
Cupola cast.	48.00 to 49.00
Heavy breakable cast.	38.00 to 39.00
Cast iron brake shoes	38.00 to 39.00
Stove plate	42.00 to 43.00
Cast iron car wheels	44.00 to 45.00
Rerolling rails	60.00 to 61.00
Unstripped motor blocks	39.00 to 40.00

Birmingham

No. 1 hvy. melting	$39.00 to $40.00
No. 2 hvy. melting	29.00 to 30.00
No. 1 dealer bundles	39.00 to 40.00
No. 2 bundles	25.00 to 26.00
No. 1 busheling	39.00 to 40.00
Machine shop turn.	24.00 to 25.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	13.00 to 14.00
Electric furnace bundles	40.00 to 41.00
Elec. furnace, 3 ft & under	37.00 to 38.00
Bar crops and plate	46.00 to 47.00
Structural and plate, 2 ft.	45.00 to 46.00
No. 1 RR hvy. melting	39.00 to 40.00
Scrap rails, random lgth.	48.00 to 49.00
Rails, 18 in. and under	52.00 to 53.00
Angles and splice bars	48.00 to 49.00
Rerolling rails	59.00 to 60.00
No. 1 cupola cast.	54.00 to 55.00
Stove plate	53.00 to 54.00
Cast iron car wheels	43.00 to 44.00
Unstripped motor blocks	43.00 to 44.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$30.00 to $31.00
No. 2 hvy. melting	26.00 to 27.00
No. 2 dealer bundles	19.00 to 20.00
Machine shop turnings	10.00 to 11.00
Mixed bor. and turn.	13.00 to 14.00
Shoveling turnings	14.00 to 15.00
Clean cast. chem. borings	25.00 to 26.00
No. 1 machinery cast.	37.00 to 38.00
Mixed yard cast.	36.00 to 37.00
Heavy breakable cast.	34.00 to 35.00
Stainless	
18-8 prepared solids	190.00 to 195.00
18-8 turnings	85.00 to 90.00
430 prepared solids	70.00 to 75.00

Detroit

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$34.00 to $35.00
No. 2 hvy. melting	26.00 to 27.00
No. 1 dealer bundles	35.00 to 36.00
No. 2 bundles	21.00 to 22.00
No. 1 busheling	34.00 to 35.00
Drop forge flashings	33.00 to 34.00
Machine shop turn.	15.00 to 16.00
Mixed bor. and turn.	15.00 to 16.00
Shoveling turnings	17.00 to 18.00
Cast iron borings	17.00 to 18.00
Heavy breakable cast.	31.00 to 32.00
Mixed cupola cast.	40.00 to 41.00
Automotive cast.	45.00 to 46.00
Stainless	
18-8 bundles and solids	200.00 to 205.00
18-8 turnings	95.00 to 100.00
430 bundles and solids	105.00 to 110.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$29.00 to $30.00
No. 2 hvy. melting	23.00 to 24.00
No. 1 dealer bundles	29.00 to 30.00
No. 2 bundles	16.00 to 17.00
No. 1 busheling	29.00 to 30.00
Machine shop turn.	9.00 to 10.00
Shoveling turnings	12.00 to 13.00
Clean cast. chem. borings	20.00 to 21.00
No. 1 machinery cast.	33.00 to 34.00
Mixed cupola cast.	33.00 to 34.00
Heavy breakable cast.	30.00 to 31.00
Stove plate	32.00 to 33.00

San Francisco

No. 1 hvy. melting	$32.00
No. 2 hvy. melting	30.00
No. 1 dealer bundles	28.00
No. 2 bundles	22.00
Machine shop turn.	15.00
Cast iron borings	15.00
No. 1 cupola cast.	45.00

Los Angeles

No. 1 hvy. melting	$32.00
No. 2 hvy. melting	30.00
No. 1 dealer bundles	28.00
No. 2 bundles	17.00
Machine shop turn.	11.00
Shoveling turnings	13.00
Cast iron borings	13.00
Elec. furn. 1 ft and under (foundry)	43.00
No. 1 cupola cast.	44.00

Seattle

No. 1 hvy. melting	$30.00
No. 2 hvy. melting	28.00
No. 2 bundles	22.00
No. 1 cupola cast.	36.00
Mixed yard cast.	36.00

Hamilton, Ont.

No. 1 hvy. melting	$30.00
No. 2 hvy. melting	26.00
No. 1 dealer bundles	30.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Busheling	20.00
Bush., new fact., prep'd.	30.00
Bush., new fact., unprep'd	24.00
Machine shop turn.	15.00
Short steel turn.	19.00
Mixed bor. and turn.	15.00
Rails, rerolling	39.00
Cast scrap	$39.00 to 41.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$40.00
No. 2 hvy. melting	34.00
No. 2 bundles	25.00
Machine shop turn.	17.00
Shoveling turnings	20.00
Cut structural plate 2 ft & under	$44.50 to 45.50
Unstripped motor blocks	38.75 to 39.75
Cupola cast.	47.00 to 48.00
Heavy breakable cast.	30.00 to 31.00

Little Lead-Zinc Shipped on Quotas

Customs Bureau reports most countries hardly dented their quotas in the first 16 days.

Observers offer several explanations.

Chances for voluntary quotas by countries affected appear to be brighter.

▪ Customs Bureau people administering the U. S. lead and zinc import quotas program haven't been overworked thus far.

A Customs report on the first 16 days of the program shows that only the Benelux countries have used up a quota. They won't be able to ship any more zinc to the U. S. until 1959.

Most countries that have been assigned quotas haven't put much of a dent in them. And some haven't even been heard from yet.

Why—Several explanations are offered. Some government observers say news of the impending quotas had been leaked out enough in advance to let all who listened get metal into the U. S. before the deadline, Oct. 1.

Some in industry say little metal or ore was actually expedited to beat the quotas. They believe the various countries have quietly put embargoes on shipment of lead and zinc metal and ore to the U. S. until regulations assuring that all segments of the native industry get a fair share of the Yankee dollar can be set up. Only Mexico has officially announced that this is being done.

Voluntary Controls—There seems to be more hope now for voluntary export controls by countries shipping lead and zinc to the U. S. A meeting of the U. N. trade group has been tentatively set for mid-November in Geneva, Switzerland. This problem will be thrashed out then.

Here's the picture of the first 16 days under lead and zinc quotas:

Countries	Shipped	Quotas
ZINC		
Canada	3174	18,920
Benelux	3723	3760
Mexico	669	3160
Bel. Congo	——	2720
Peru	——	1880
Italy	331	1800
Others	766	3040
LEAD		
Mexico	3108	18,440
Australia	——	11,840
Canada	649	7960
Yugoslavia	——	7880
Peru	126	6440
Others	1963	3040
ZINC ORE		
Mexico	543	35,240
Canada	4968	33,240
Peru	1135	17,560
Others	116	8920
LEAD ORE		
Peru	212	8080
S. Africa	——	7440
Canada	270	6720
Australia	——	5040
Bolivia	18	2520
Others	152	3280

(Short tons)

Magnesium

While the aluminum industry is nipping at the heels of other metals and materials in search of new markets, it is becoming the target of magnesium. At the Magnesium Assn. convention in Detroit, Ralph Gillespie of Brooks & Perkins, Inc., presented some direct comparisons of magnesium and aluminum price and performance.

In a detailed comparison of the cost of an aluminum 6062 solid extrusion with magnesium AZ31F solid extrusion, aluminum has the edge on a straight price per lb basis. But by volume, because of its lighter weight, magnesium is cheaper, says Mr. Gillespie.

Copper

You can count on the custom smelters to be particularly sensitive to market pressures. So, their latest price hike of 1½¢ per lb, to 30¢, should be no surprise.

Some smelters had been turning away domestic business at 28½¢ because they could sell for export at over 29¢ per lb. The final blow to the 28½¢ price was when the low bid to supply copper to the Denver Mint was 30½¢ per lb.

Tin prices for the week:—Oct. 15—96.125; Oct. 16—96.00; Oct. 17—95.875; Oct. 20—96.50; Oct. 21—96.50.*

* Estimate.

Primary Prices

(cents per lb)	current price	last price	date of change
Aluminum pig	24.70	24.00	8/1/58
Aluminum ingot	26.80	26.10	8/1/58
Copper (E)	27.50	26.50	10/13/58
Copper (CS)	30.00	28.50	10/20/58
Copper (L)	27.50	26.50	10/13/58
Lead, St. L.	12.00	12.30	10/14/58
Lead, N. Y.	13.00	12.50	10/14/58
Magnesium ingot	36.00	34.00	8/13/58
Magnesium pig	35.25	33.75	8/13/58
Nickel	74.00	64.50	12/6/56
Titanium sponge	185-205	200-250	4/1/58
Zinc, E. St. L.	11.00	10.50	10/8/58
Zinc, N. Y.	11.50	11.00	10/8/58

ALUMINUM: 99% ingot frt allwd. COPPER: (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. LEAD: common grade. MAGNESIUM: 99.8% pig Velasco, Tex. NICKEL: Port Colbourne, Canada. ZINC: prime western. TIN: see above; other primary prices, pg. 109.

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. ship. pt., frt. allowed)

Flat Sheet (Mill Finish and Plate)

("F" temper except 6061-0)

Alloy	.032	.081	.136-.249	.250-3.
1100, 3003	45.7	43.8	42.8	43.3
5052	53.1	48.4	46.9	46.0
6061-0	50.1	45.7	43.9	44.9

Extruded Solid Shapes

Factor	6063 T-5	5052 T-6
6- 8	42.7-44.2	51.1-54.8
12-14	42.7-44.2	52.0-56.5
24-26	43.2-44.7	62.8-67.5
36-38	46.7-49.2	86.9-90.5

Screw Machine Stock—2011-T-3

Size*	¼	5/16-⅜	7/16-1	1¼-1½
Price	62.0	61.2	59.7	57.3

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length*→	72	96	120	144
.019 gage	$1.411	$1.884	$2.353	$2.823
.024 gage	1.762	2.349	2.937	3.524

MAGNESIUM

(F.o.b. shipping Pt., carload frt. allowed)

Sheet and Plate

Type→ Gage→	.250 3.00	.250-2.00	.188	.081	.032
AZ31B Stand. Grade	.....	67.9	69.0	77.9	108.1
AZ31B Spec.	.....	93.3	95.7	108.7	171.3
Tread Plate	.....	70.6	71.7	.....	.....
Tooling Plate	73.0	.....	.....	.....	.....

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade (AZ31C)	69.6	70.7	75.6	89.2
Spec. Grade (AZ31B)	84.6	85.7	90.6	104.2

Alloy Ingot

AZ91B (Die Casting) ..... 37.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velasco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	126	106	128
Strip, CR	124	108	138
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	120	105	121
Seamless tube	157	129	200
Shot, blocks	...	87	...

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	50.63	.....	47.86	50.82
Brass, 70/30	44.57	45.11	44.51	47.48
Brass, Low	47.03	47.57	46.97	49.84
Brass, R L	47.89	48.43	47.83	50.70
Brass, Naval	48.84	.....	43.15	52.00
Munts Metal	46.95	.....	42.76	.....
Comm. Bz.	49.30	49.84	49.25	51.86
Mang. Bz.	52.53	.....	46.76	.....
Phos. Bz. 5%	69.67	.....	70.17	.....

Free Cutting Brass Rod 30.30

TITANIUM

(Base prices, f.o.b. mill)

Sheet and strip, commercially pure, $8.50-$10.10; alloy, $15.95; Plate, HR, commercially pure, $6.00-$6.75; alloy, $8.75-$9.50. Wire, rolled and/or drawn, commercially pure, $6.50-$7.00; alloy, $10.00-$11.50; Bar, HR or forged, commercially pure, $5.25-$5.50; alloy, $5.25-$6.35; billets, HR, commercially pure, $4.10-$4.35; alloy, $4.10-$4.20.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex.. 29.50
Beryllium aluminum 5% Be, Dollar per lb contained Be $74.75
Beryllium copper, per lb conta'd Be. $43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading $71.50
Bismuth, ton lots ..... $ 2.25
Cadmium, del'd ..... $ 1.45
Calcium, 99.9% small lots ..... $ 4.55
Chromium, 98.8% metallic basis... $ 1.31
Cobalt, 97-99% (per lb) .... $2.00 to $2.07
Germanium, per gm, f.o.b. Miami, Okla., refined ..... 35.00 to 42.00
Gold, U. S. Treas., per troy oz. $35.00
Indium, 99.9%, dollars per troy oz.. $ 2.25
Iridium, dollars per troy oz. .... $70 to $80
Lithium, 98% ..... $11.00 to $14.00
Magnesium, sticks, 100 to 500 lb.... 59.00
Mercury, dollars per 76-lb flask, f.o.b. New York ..... $234 to $237
Nickel oxide sinter at Buffalo, N. Y., or other U. S. points of entry, contained nickel 69.60
Palladium, dollars per troy oz... $15 to $17
Platinum, dollars per troy oz... $57 to $60
Rhodium ..... $120.00 to $125.00
Silver ingots (¢ per troy oz.) 90.375
Thorium, per kg. $43.00
Vanadium ..... $ 3.45
Zirconium sponge ..... $ 5.00

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot
- No. 115 ..... 29.00
- No. 120 ..... 28.25
- No. 123 ..... 27.00

80-10-10 ingot
- No. 305 ..... 33.25
- No. 315 ..... 31.25

88-10-2 ingot
- No. 210 ..... 40.25
- No. 215 ..... 36.00
- No. 245 ..... 32.75

Yellow ingot
- No. 405 ..... 24.00

Manganese bronze
- No. 421 ..... 25.75

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
- 0.30 copper max. 24.75-25.00
- 0.60 copper max. 24.50-24.75

Piston alloys (No. 122 type)..24.25-25.25
No. 12 alum. (No. 2 grade)...21.50-22.00
108 alloy 22.00-22.50
195 alloy 25.00-26.00
13 alloy (0.60 copper max.)...24.25-24.75
AXS-679 (1 pct zinc) 21.75-22.25

Steel deoxidizing aluminum notch bar granulated or shot

Grade 1—95-97½% 22.50-23.50
Grade 2—92-95% 21.25-22.25
Grade 3—90-92% 20.25-21.25
Grade 4—85-90% 17.50-18.50

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	23½	22⅝
Yellow brass	18	15¼
Red brass	20¾	20
Comm. bronze	21⅛	20⅛
Mang. bronze	16⅝	15⅞
Yellow brass rod ends	16¾	

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	26
No. 2 copper wire	24½
Light copper	22¼
*Refinery brass	24½
Copper bearing material	23½

* Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	26
No. 2 copper wire	24½
Light copper	22¼
No. 1 composition	21½
No. 1 comp. turnings	21
Hvy. yellow brass solids	15½
Brass pipe	17½
Radiators	17¾

Aluminum

Mixed old cast.	12½—13
Mixed new clips	15½—16½
Mixed turnings, dry	13½—14½

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass

No. 1 copper wire	23 —23½
No. 2 copper wire	21 —21½
Light copper	19 —19½
Auto radiators (unsweated)	14 —14½
No. 1 composition	17½—18
No. 1 composition turnings	16½—17
Cocks and faucets	14 —14½
Clean heavy yellow brass	12¼—12¾
Brass pipe	14 —14½
New soft brass clippings	14½—15
No. 1 brass rod turnings	12 —12½

Aluminum

Alum. pistons and struts	5¼— 5⅜
Aluminum crankcases	9¼— 9⅜
1100 (2S) aluminum clippings	12¾—13¼
Old sheet and utensils	9¼— 9⅜
Borings and turnings	6¼— 6⅜
Industrial castings	9¼— 9⅜
2024 (24S) clippings	10⅜—11¼

Zinc

New zinc clippings	4½— 5
Old zinc	3¼— 3½
Zinc routings	2 — 2¼
Old die cast scrap	1¾— 2

Nickel and Monel

Pure nickel clippings	52-54
Clean nickel turnings	37-40
Nickel anodes	52-54
Nickel rod ends	52-54
New Monel clippings	30-32
Clean Monel turnings	30-32
Old sheet Monel	26-28
Nickel silver clippings, mixed	18
Nickel silver turnings, mixed	15

Lead

Soft scrap lead	8 — 8¼
Battery plates (dry)	2¾— 3
Batteries, acid free	2½— 2⅝

Miscellaneous

Block tin	75 —76
No. 1 pewter	59 —60
Auto babbitt	39 —40
Mixer common babbitt	9½—10
Solder joints	13¼—13⅜
Siphon tops	42
Small foundry type	10½—10¾
Monotype	10½—10¾
Lino. and stereotype	9½— 9¾
Electrotype	8½— 8¾
Hand picked type shells	6½— 7
Lino. and stereo. dross	2¾— 3
Electro dross	2¼— 2½

(Effective Oct. 20, 1958)

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PIL-ING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide-Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$119.00 *B3*		5.55 *B3*	8.10 *B3*	5.55 *B5*						
	Buffalo, N. Y.	$80.00 *R3, B3*	$99.50 *R3, B3*	$119.00 *R3, B3*	6.50 *B3*	5.55 *B3*	8.10 *B3*	5.55 *B3*	5.10 *B3, R3*	7.425 *S10, R7*	7.575 *B3*			
	Phila., Pa.									7.875 *P15*				
	Harrison, N. J.													15.55 *C11*
	Conshohocken, Pa.		$104.50 *A2*	$126.00 *A2*					5.15 *A2*		7.575 *A2*			
	New Bedford, Mass.									7.875 *R6*				
	Johnstown, Pa.	$80.00 *B3*	$99.50 *B3*	$119.00 *B3*		5.55 *B3*	8.10 *B3*							
	Boston, Mass.									7.975 *T8*				
	New Haven, Conn.									7.875 *D1*				
	Baltimore, Md.									7.425 *T8*				15.90 *T8*
	Phoenixville, Pa.					5.55 *P2*		5.55 *P2*						
	Sparrows Pt., Md.								5.10 *B3*		7.575 *B3*			
	New Britain, Bridgeport, Wallingford, Conn.			$119.00 *N8*						7.875 *W1,S7*				
	Pawtucket, R. I. Worcester, Mass.									7.975 *N7, A5*				15.90 *N7* 15.70 *T8*
MIDDLE WEST	Alton, Ill.								5.30 *L1*					
	Ashland, Ky.								5.10 *A7*		7.575 *A7*			
	Canton-Massillon, Dover, Ohio		$102.00 *R3*	$119.00 *R3,* $114.00 *T5*						7.425 *G4*		10.80 *G4*		15.50 *C11*
	Chicago, Ill. Franklin Park, Ill. Evanston, Ill.	$80.00 *U1, R3*	$99.50 *U1, R3,W8*	$119.00 *U1, R3,W8*	6.50 *U1*	5.50 *U1, W8,P13*	8.05 *U1, Y1,W8*	5.50 *U1*	5.10 *W8, N4,A1*	7.525 *A1,T8, M8*	7.575 *W8*		8.40 *W8, S9,I3*	15.55 *A1, S9,G4,T8*
	Cleveland, Ohio									7.425 *A5,J3*		10.75 *A5*	8.40 *J3*	
	Detroit, Mich.			$119.00 *R5*					5.10 *G3, M2*	7.425 *M2, D1,D2,P11*	7.575 *G3*	10.80 *D2*		
	Anderson, Ind.									7.425 *G4*				
	Gary, Ind. Harbor, Indiana	$80.00 *U1*	$99.50 *U1*	$119.00 *U1, Y1*		5.50 *U1, I3*	8.05 *U1, J3*	5.50 *I3*	5.10 *U1, I3,Y1*	7.425 *Y1*	7.575 *U1, I3,Y1*	10.90 *Y1*	8.40 *U1, Y1*	
	Sterling, Ill.	$80.00 *N4*				5.50 *N4*			5.20 *N4*					
	Indianapolis, Ind.									7.575 *R5*				15.70 *R5*
	Newport, Ky.								5.10 *A9*				8.40 *A9*	
	Niles, Warren, Ohio Sharon, Pa.		$99.50 *S1, C10*	$119.00 *C10,S1*					5.10 *R3, S1*	7.425 *R3, T4,S1*	7.575 *R3, S1*	10.80 *S1, R3*	8.40 *S1*	15.55 *S1*
	Owensboro, Ky.	$80.00 *G5*	$99.50 *G5*	$119.00 *G5*										
	Pittsburgh, Midland, Butler, Aliquippa, McKeesport, Pa.	$80.00 *U1, P6*	$99.50 *U1, C11,P6*	$119.00 *U1, C11,B7*	6.50 *U1*	5.50 *U1, J3*	8.05 *U1, J3*	5.50 *U1*	5.10 *P6*	7.425 *J3,B4* 7.525 *E3*			8.40 *S9*	15.55 *S9*
	Weirton, Wheeling, Follansbee, W. Va.				6.50 *U1, W3*	5.50 *W3*		5.50 *W3*	5.10 *W3*	7.425 *F3*	7.575 *W3*	10.80 *W3*		
	Youngstown, Ohio	$80.00 *R3*	$99.50 *Y1, C10*	$119.00 *Y1*			8.05 *Y1*		5.10 *U*	7.425 *Y1,R5*	7.575 *U1, Y1*	10.95 *Y1*	8.40 *U1, Y1*	15.55 *R5, Y1*
WEST	Fontana, Cal.	$90.50 *K1*	$109.00 *K1*	$140.00 *K1*		6.30 *K1*	8.85 *K1*	6.45 *K1*	5.85 *K1*	9.275 *K1*				
	Geneva, Utah		$99.50 *C7*			5.50 *C7*	8.05 *C7*							
	Kansas City, Mo.					5.60 *S2*	8.15 *S2*						8.65 *S2*	
	Los Angeles, Torrance, Cal.		$109.00 *B2*	$139.00 *B2*		6.20 *C7, B2*	8.75 *B2*		5.85 *C7, B2*	9.325 *J3* 9.30 *C1*			9.60 *B2*	17.75 *J3*
	Minnequa, Colo.					5.80 *C6*			6.20 *C6*	9.375 *C6*				
	Portland, Ore.					6.25 *O2*								
	San Francisco, Niles, Pittsburg, Cal.		$109.00 *B2*			6.15 *B2*	8.70 *B2*		5.85 *C7, B2*					
	Seattle, Wash.		$113.00 *B2*			6.25 *B2*	8.80 *B2*		6.10 *B2*					
SOUTH	Atlanta, Ga.					5.70 *A8*			5.10 *A8*					
	Fairfield, Ala. City, Birmingham, Ala.	$80.00 *T2*	$99.50 *T2*			5.50 *T2 R3,C16*	8.05 *T2*		5.10 *T2, R3,C16*		7.575 *T2*			
	Houston, Lone Star, Texas		$104.50 *S2*	$124.00 *S2*		5.60 *S2*	8.15 *S2*						8.65 *S2*	

(Effective Oct. 20, 1958)

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		SHEETS								WIRE ROD	TINPLATE†		BLACK PLATE
		Hot-rolled *18* ga. & hvyr.	Cold-rolled	Galvanized (Hot-dipped)	Enameling	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Cokes* *1.25*-lb. base box	Electro** *0.25*-lb. base box	Hollowware Enameling *29* ga.
EAST	Buffalo, N. Y.	5.10 *B3*	6.275 *B3*				7.525 *B3*	9.275 *B3*		6.40 *W6*			
	Claymont, Del.												
	Coatesville, Pa.												
	Conshohocken, Pa.	5.15 *A2*	6.325 *A2*				7.575 *A2*						
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.									6.40 *B3*			
	Fairless, Pa.	5.15 *U1*	6.325 *U1*				7.575 *U1*	9.775 *U1*			$10.15 *U1*	$8.85 *U1*	
	New Haven, Conn.												
	Phoenixville, Pa.												
	Sparrows Pt., Md.	5.10 *B3*	6.275 *B3*	6.875 *B3*			7.525 *B3*	9.275 *B3*	10.025 *B3*	6.50 *B3*	$10.15 *B3*	$8.85 *B3*	
	Worcester, Mass.									6.70 *A5*			
	Trenton, N. J.												
MIDDLE WEST	Alton, Ill.									6.60 *L1*			
	Ashland, Ky.	5.10 *A7*		6.875 *A7*	6.775 *A7*		7.525 *A7*						
	Canton-Massillon, Dover, Ohio			6.875 *R1, R3*									
	Chicago, Joliet, Ill.	5.10 *W8, A1*					7.525 *U1, W8*			6.40 *A5, R3, W8*			
	Sterling, Ill.									6.50 *N4, K2*			
	Cleveland, Ohio	5.10 *R3, J3*	6.275 *R3, J3*	7.65 *R3**	6.775 *R3*		7.525 *R3, J3*	9.275 *R3, J3*		6.40 *A5*			
	Detroit, Mich.	5.10 *G3, M2*	6.275 *G3, M2*				7.525 *G3*	9.275 *G3*					
	Newport, Ky.	5.10 *A1*	6.275 *A1*										
	Gary, Ind. Harbor, Indiana	5.10 *U1, I3, Y1*	6.275 *U1, I3, Y1*	6.875 *U1, I3*	6.775 *U1, I3, Y1*	7.225 *U1*	7.525 *U1, Y1, I3*	9.275 *U1, Y1*		6.40 *Y1*	$10.05 *U1, Y1*	$8.75 *I3, U1, Y1*	7.50 *U1, Y1*
	Granite City, Ill.	5.20 *G2*	6.375 *G2*	6.975 *G2*	6.875 *G2*							$8.85 *G2*	7.60 *G2*
	Kokomo, Ind.			6.975 *C9*						6.50 *C9*			
	Mansfield, Ohio	5.10 *E2*	6.275 *E2*			7.225 *E2*							
	Middletown, Ohio		6.275 *A7*	6.875 *A7*	6.775 *A7*	7.225 *A7*							
	Niles, Warren, Ohio Sharon, Pa.	5.10 *R3, N3, S1*	6.275 *R3*	6.875 *R3* 7.65 *R3**	6.775 *N3, S1*	7.225 *N3, S1*, R3*	7.525 *R3, S1*	9.275 *S1, R3*				$8.75 *R3*	
	Pittsburgh, Midland, Butler, Donora, Aliquippa, McKeesport, Pa.	5.10 *U1, J3, P6*	6.275 *U1, J3, P6*	6.875 *U1, J3* 7.50 *E3**	6.775 *U1*		7.525 *U1, J3*	9.275 *U1, J3*	10.025 *U1, J3*	6.40 *A5, J3, P6*	$10.05 *W5, J3*	$8.75 *U1, J3*	7.50 *U1, J3*
	Portsmouth, Ohio	5.10 *P7*	6.275 *P7*							6.40 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	5.10 *W3, W5*	6.275 *W3, F3, W5*	6.875 *W3, W5* 7.50 *W3**		7.225 *W3, W5*	7.525 *W3*	9.275 *W3*			$10.05 *W5, W3*	$8.75 *W5, W3*	7.50 *W5*
	Youngstown, Ohio	5.10 *U1, Y1*	6.275 *Y1*	7.50 *J3**	6.775 *Y1*		7.525 *Y1*	9.275 *Y1*		6.40 *Y1*			
WEST	Fontana, Cal.	5.85 *K1*	7.525 *K1*				8.275 *K1*	10.575 *K1*			$10.80 *K1*	$9.50 *K1*	
	Geneva, Utah	5.20 *C7*											
	Kansas City, Mo.									6.65 *S2*			
	Los Angeles, Torrance, Cal.									7.20 *B2*			
	Minnequa, Colo.									6.65 *C6*			
	San Francisco, Niles, Pittsburg, Cal.	5.80 *C7*	7.225 *C7*	7.625 *C7*						7.20 *C7*	$10.80 *C7*	$9.50 *C7*	
SOUTH	Atlanta, Ga.												
	Fairfield, Ala. Alabama City, Ala.	5.10 *T2, R3*	6.275 *T2, R3*	6.875 *T2, R3*	6.775 *T2*					6.40 *T2, R3*	$10.15 *T2*	$8.85 *T2*	
	Houston, Texas									6.65 *S2*			

† Special coated mfg. terne deduct 50¢ from 1.25-lb. coke base box price. Can-making quality blackplate 55 to 128 lb. deduct $2.20 from 1.25 lb. coke base box.

*COKES: 1.50-lb. add 25¢.

**ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add $1.00. Differential 1.00 lb. 0.25 lb. add 65¢.

* Electrogalvanized sheets.

(Effective Oct. 20, 1958)

*7.425 at Sharon-Niles is 7.225

IRON AGE

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon† Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.				6.725 *B3*	9.025 *B3*	8.30 *B3*					
	Buffalo, N. Y.	5.675 *R3,B3*	5.675 *R3,B3*	7.70 *B5*	6.725 *B3,R3*	9.025 *B3,B5*	8.30 *B3*	5.30 *B3*				8.00 *W6*
	Claymont, Del.							5.30 *C4*		7.50 *C4*	7.95 *C4*	
	Coatesville, Pa.							5.30 *L4*		7.50 *L4*	7.95 *L4*	
	Conshohocken, Pa.							5.30 *A2*	6.375 *A2*	7.50 *A2*	7.95 *A2*	
	Harrisburg, Pa.							5.30 *P2*	6.475 *P2*			
	Milton, Pa.	5.825 *M7*	5.825 *M7*									
	Hartford, Conn.			8.15 *R3*		9.325 *R3*						
	Johnstown, Pa.	5.675 *B3*	5.675 *B3*		6.725 *B3*		8.30 *B3*	5.30 *B3*		7.50 *B3*	7.95 *B3*	8.00 *B3*
	Fairless, Pa.	5.825 *U1*	5.825 *U1*		6.875 *U1*							
	Newark, N. J. Camden, N. J.			8.10 *W10, P10*		9.20 *W10, P10*						
	Bridgeport, Putnam, Willimantic, Conn.			8.20 *W10* 8.15 *J3*	6.80 *N8*	9.175 *N8*						
	Sparrows Pt., Md.		5.675 *B3*					5.30 *B3*		7.50 *B3*	7.95 *B3*	8.10 *B3*
	Palmer, Worcester, Readville, Mass. Mansfield, Mass.			8.20 *B5, C14*		9.325 *A5,B5*						8.30 *A5, W6*
	Spring City, Pa.			8.10 *K4*		9.20 *K4*						
MIDDLE WEST	Alton, Ill.	5.875 *L1*										8.20 *L1*
	Ashland, Newport, Ky.							5.30 *A7, A9*		7.50 *A9*	7.95 *A7*	
	Canton, Massillon, Mansfield, Ohio	6.15* *R3*		7.65 *R3,R2*	6.725 *R3* 6.475 *T5*	9.025 *R3,R2* 8.775 *T5*		5.30 *E2*				
	Chicago, Joliet, Waukegan, Madison, Harvey, Ill.	5.675 *U1,R3, W8,N4,P13*	5.675 *U1,R3, N4,P13,W8* 5.875*L1*	7.65 *A5, W10,W8, B5,L2,N9*	6.725 *U1,R3, W8*	9.025 *A5, W10,W8, L2,N8,B5*	8.30 *U1,W8, R3*	5.30 *U1,A1, W8,13*	6.375 *U1*	7.50 *U1, W8*	7.95 *U1, W8*	8.00 *A5,R3, W8,N4, K2,W7*
	Cleveland, Ohio Elyria, Ohio	5.675 *R3*	5.675 *R3*	7.65 *A5,C13, C18*		9.025 *A5, C13,C18*	8.30 *R3*	5.30 *R3,J3*	6.375 *J3*		7.95 *R3,J3*	8.00 *A5, C13,C18*
	Detroit, Mich.	5.675 *G3*	5.675 *G3*	7.90 *P3* 7.85 *P8,B5* 7.65 *R5*	6.725 *R5,G3*	9.025 *R5* 9.225 *B5,P3, P8*	8.30 *G3*	5.30 *G3*		7.50 *G3*	7.95 *G3*	
	Duluth, Minn.											8.00 *A5*
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.675 *U1,I3, Y1*	5.675 *U1,I3, Y1*	7.65 *R3,J3*	6.725 *U1,I3, Y1*	9.025 *R3,M4*	8.30 *U1,Y1*	5.30 *U1,I3, Y1*	6.375 *J3, I1*	7.50 *U1, Y1*	7.95 *U1, Y1,I3*	8.10 *M4*
	Granite City, Ill.							5.40 *G2*				
	Kokomo, Ind.		5.775 *C9*									8.10 *C9*
	Sterling, Ill.	5.775 *N4*	5.775 *N4*					5.30 *N4*				8.10 *K2*
	Niles, Warren, Ohio Sharon, Pa.			7.65 *C10*	6.725 *C10,S1*	9.025 *C10*	7.925 *S1*	5.30 *R3,S1*		7.50 *S1*	7.95 *R3, S1*	
	Owensboro, Ky.	5.675 *G5*			6.725 *G5*							
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.675 *U1,J3*	5.675 *U1,J3*	7.65 *A5,B4, R5,J3,C11, W10,S9,C8, M9*	6.725 *U1,J3, C11,B7*	9.025 *A5, W10,R3,S9, C11,C8,M9*	8.30 *U1,J3*	5.30 *U1,J3*	6.375 *U1*	7.50 *U1, J3,B7*	7.95 *U1, J3,B7*	8.00 *A5, J3,P6*
	Portsmouth, Ohio											8.00 *P7*
	Weirton, Wheeling, Follansbee, W. Va.							5.30 *W5*				
	Youngstown, Ohio	5.675 *U1,R3, Y1*	5.675 *U1,R3, Y1*	7.65 *A1,Y1, F2*	6.725 *U1,Y1*	9.025 *Y1,F2*	8.30 *U1,Y1*	5.30 *U1, R3,Y1*		7.50 *Y1*	7.95 *U1,Y1*	8.00 *Y1*
WEST	Emeryville, Cal. Fontana, Cal.	6.425 *J5* 6.375 *K1*	6.425 *J5* 6.375 *K1*		7.775 *K1*		8.625 *K1*	6.10 *K1*		8.30 *K1*	8.75 *K1*	
	Geneva, Utah							5.30 *C7*			7.95 *C7*	
	Kansas City, Mo.	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*					8.25 *S2*
	Los Angeles, Torrance, Cal.	6.375 *C7,B2*	6.375 *C7,B2*	9.10 *R3,P14, S12*	7.775 *B2*	11.00 *P14, S12*	8.625 *B2*					8.95 *B2*
	Minnequa, Colo.	6.125 *C6*	6.125 *C6*					6.15 *C6*				8.25 *C6*
	Portland, Ore.	6.425 *O2*	6.425 *O2*									
	San Francisco, Niles, Pittsburg, Cal.	6.375 *C7* 6.425 *B2*	6.375 *C7* 6.425 *B2*				8.675 *B2*					8.95 *C7,C6*
	Seattle, Wash.	6.425 *B2,N6*	6.425 *B2*				8.675 *B2*	6.20 *B2*		8.40 *B2*	8.85 *B2*	
SOUTH	Atlanta, Ga.	5.875 *A8*	5.675 *A8*									8.80 *A8*
	Fairfield, Ala. City, Birmingham, Ala.	5.675 *T2,R3, C16*	5.675 *T2,R3, C16*	8.25 *C16*			8.30 *T2*	5.30 *T2,R3*			7.95 *T2*	8.00 *T2,R3*
	Houston, Ft. Worth, Lone Star, Texas	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*	5.40 *S2*		7.60 *S2*	8.05 *S2*	8.25 *S2*

† Merchant Quality—Special Quality 35¢ higher. (Effective Oct. 20, 1958) * Special Quality.

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angel Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A9 Acme-Newport Steel Co., Newport, Ky.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brook Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
B7 A. M. Byers, Pittsburgh
B8 Braeburn Alloy Steel Corp., Braeburn, Pa.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C4 Claymont Products Dept., Claymont, Del.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.

D1 Detroit Steel Corp., Detroit
D2 Dearborn Div., Sharon Steel Corp.
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire-Reeves Steel Corp., Mansfield, O.
E3 Enamel Products & Plating Co., McKeesport, Pa.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.
G5 Green River Steel Corp., Owensboro, Ky.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Calif.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.
K4 Keystone Drawn Steel Co., Spring City, Pa.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M6 Mystic Iron Works, Everett, Mass.
M7 Milton Steel Products Div., Milton, Pa.
M8 Mill Strip Products Co., Evanston, Ill.
M9 Moltrup Steel Products Co., Beaver Falls, Pa.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N3 Niles Rolling Mill Div., Niles, O.
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
N9 Nelson Steel & Wire Co.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P13 Phoenix Mfg. Co., Joliet, Ill.
P14 Pacific Tube Co.
P15 Philadelphia Steel and Wire Corp.

R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 Jones & Laughlin Steel Corp., Stainless and Strip Div.
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Div., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw and Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
S10 Seneca Steel Service, Buffalo
S11 Southern Electric Steel Co., Birmingham
S12 Sierra Drawn Steel Corp., Los Angeles, Calif.

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T7 Texas Steel Co., Fort Worth
T8 Thompson Wire Co., Boston

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago.
W8 Wisconsin Steel Div., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W12 Wallace Barnes Steel Div., Bristol, Conn.

Y1 Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING — **Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.**

	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½-3 In.		2 In.		2½ In.		3 In.		3½-4 In.	
STANDARD T. & C.	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**
Sparrows Pt. *B3*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Youngstown *R3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Fontana *K1*	*10.75	*26.00	*7.75	*22.00	*4.25	*17.50	*1.75	*16.75	*1.25	*15.75	*0.75	*15.25	0.75	*15.50								
Pittsburgh *J3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Alton, Ill. *L1*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Sharon *M3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Fairless *N2*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Pittsburgh *N1*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Wheeling *W5*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Wheatland *W4*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Youngstown *Y1*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Indiana Harbor *Y1*	1.25	*14.0	4.25	*10.0	7.75	*5.50	10.25	*4.75	10.75	*3.75	11.25	*3.25	12.75	*3.50								
Lorain *N2*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Youngstown *R3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Fairless *N2*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Fontana *K1*	*6.25		*2.25		0.75		1.25		1.75		2.25		2.75									
Pittsburgh *J3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Alton, Ill. *L1*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Sharon *M3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Pittsburgh *N1*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Wheeling *W5*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Wheatland *W4*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Youngstown *Y1*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Indiana Harbor *Y1*	5.75	*8.0	9.75	*4.0	12.75	0.50	13.25	*0.75	13.75	0.25	14.25	0.75	14.75	*0.50								
Lorain *N2*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50

Threads only, buttweld and seamless, 2¼ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 5½ pt. higher discount.
Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 10¢ per lb.

(Effective Oct. 20, 1958)

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	$1.84	T-1
18	4	1	—	5	2.545	T-4
18	4	2	—	—	2.005	T-2
1.5	4	1.5	8	—	1.20	M-1
6	4	3	6	—	1.59	M-3
6	4	2	5	—	1.345	M-2
High-carbon chromium..					.955	D-3, D-5
Oil hardened manganese					.505	O-2
Special carbon					.38	W-1
Extra carbon					.38	W-1
Regular carbon					.325	W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Base prices, cents per lb f.o.b.

	Cladding	Plate (*L4, C4, A3, J2*) 10 pct	15 pct	20 pct	Sheet (*I2*) 20 pct
Stainless Type	302	.....	.....	.....	37.50
	304	28.80	31.55	34.30	40.00
	316	42.20	46.25	50.25	58.75
	321	34.50	37.75	41.05	47.25
	347	40.80	44.65	48.55	57.00
	405	24.60	26.90	29.25	.....
	410	22.70	24.85	27.00	.....
	430	23.45	25.65	27.90	.....

CR Strip (S9) Copper, 10 pct, 2 sides, 38.75; 1 side, 33.10.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Tie Plates	Track Bolts Untreated
Bessemer *U1*	5.75	6.725	7.25	.....	.....	.....
Cleveland *R3*	.....	.....	.....	.....	.....	15.35
So. Chicago *R3*	.....	.....	.....	10.10	.....	.....
Ensley *T2*	5.75	6.725	.....	.....	.....	.....
Fairfield *T2*	.....	6.725	.....	10.10	6.875	.....
Gary *U1*	5.75	.....	.....	.....	6.875	.....
Huntington *C16*	.....	6.50	.....	.....	.....	.....
Ind. Harbor *Y1*	.....	.....	.....	10.10	.....	.....
Johnstown *B3*	.....	6.725	.....	.....	.....	.....
Joliet *U1*	.....	.....	7.25	.....	.....	.....
Kansas City *S2*	.....	.....	.....	10.10	.....	15.35
Lackawanna *B3*	5.75	6.725	7.25	.....	6.875	.....
Lebanon *B3*	.....	.....	7.25	.....	.....	15.35
Minnequa *C6*	5.75	7.225	7.25	10.10	6.875	15.35
Pittsburgh *P5*	.....	.....	.....	.....	.....	14.75
Pittsburgh *J3*	.....	.....	.....	10.10	.....	.....
Seattle *B2*	.....	.....	.....	.....	6.75	15.85
Steelton *B3*	5.75	.....	7.25	.....	6.875	.....
Struthers *Y1*	.....	.....	.....	10.10	.....	.....
Torrance *C7*	.....	.....	.....	.....	6.75	.....
Williamsport *S5*	.....	6.50	.....	.....	.....	.....
Youngstown *R3*	.....	.....	.....	10.10	.....	.....

COKE

	Net-Ton
Furnace, beehive (f.o.b.) Connellsville, Pa.	$14.50
Foundry, beehive (f.o.b.)	$18.00 to $18.50
Foundry oven coke	
Buffalo, del'd	$31.75
Detroit, f.o.b.	30.50
New England, del'd	31.55
Kearney, N. J., f.o.b.	29.75
Philadelphia, f.o.b.	29.50
Swedeland, Pa., f.o.b.	29.50
Painesville, Ohio, f.o.b.	30.50
Erie, Pa., f.o.b.	30.50
Cleveland, del'd	32.65
Cincinnati, del'd	31.84
St. Paul, f.o.b.	29.75
St. Louis, f.o.b.	31.50
Birmingham, f.o.b.	28.85
Milwaukee, f.o.b.	30.50
Neville, Is., Pa.	29.25

LAKE SUPERIOR ORES

51.50% Fe natural content, delivered lower Lake ports. Prices for 1958 season. Freight changes for seller's account.

	Gross Ton
Openhearth lump	$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Fully Processed
Field	.....	9.875	
Armature	11.70	11.20	11.70
Elect.	12.40	11.90	12.40
Special Motor	.....	12.475	
Motor	13.55	13.05	13.55
Dynamo	14.65	14.15	14.65
Trans. 72	15.70	15.20	15.70
Trans. 65	16.30		
		Grain Oriented	
Trans. 58	16.80	Trans. 80	19.70
Trans. 52	17.85	Trans. 73	20.20
		Trans. 66	20.70

Producing points: Beech Bottom (*W5*); Brackenridge (*A3*); Granite City (*G2*); Indiana Harbor (*I3*); Mansfield (*E2*); Newport, Ky. (*A9*); Niles, O. (*N3*); Vandergrift (*U1*); Warren, O. (*R3*); Zanesville, Butler (*A7*).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE Diam. (In.)	Length (In.)	Price	CARBON* Diam. (In.)	Length (In.)	Price
24	84	26.00	40	100, 110	10.70
20	72	25.25	35	110	10.70
18	72	25.75	30	110	10.85
14	72	25.75	24	72 to 84	11.25
12	72	26.25	20	90	11.00
10	60	28.00	17	72	11.40
10	48	28.50	14	72	11.85
7	60	28.25	12	60	12.95
6	60	31.50	10	60	13.00
4	40	35.00	8	60	13.30
3	40	37.00			
2½	30	39.25			
2	24	60.75			

* Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

Carloads per 1000

Super duty, Mo., Pa., Md., Ky.	$185.00
High duty (except Salina, Pa., add $5.00)	140.00
Medium duty	125.00
Low duty (except Salina, Pa., add $2.00)	103.00
Ground fire clay, net ton, bulk	22.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$158.00
Childs, Hays, Latrobe, Pa.	163.00
Chicago District	168.00
Western Utah	183.00
California	165.00
Super Duty Hays, Pa., Athens, Tex., Windham, Warren, O., Morrisville	163.00-168.00
Silica cement, net ton, bulk, Latrobe	29.75
Silica cement, net ton, bulk, Chicago	26.75
Silica cement, net ton, bulk, Ensley, Ala.	27.75
Silica cement, net ton, bulk, Mt. Union	25.75
Silica cement, net ton, bulk, Utah and Calif.	39.00

Chrome Brick

Per net ton

Standard chemically bonded, Balt.	$109.00
Standard chemically bonded, Curtiner, Calif.	119.00
Burned, Balt.	103.00

Magnesite Brick

Standard, Baltimore	$140.00
Chemically bonded, Baltimore	119.00

Grain Magnesite

St. ⅜ to ½-in. grains

Domestic, f.o.b. Baltimore in bulk.	$73.00
Domestic, f.o.b. Chewalah, Wash., Luning, Nev. in bulk	46.00
in sacks	52.00-54.00

Dead Burned Dolomite

Per net ton

F.o.b. bulk, producing points in:	
Pa., W. Va., Ohio	$16.75
Missouri Valley	15.00
Midwest	17.00

(Effective Oct. 20, 1958)

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard Q Coated Nails Col	Woven Wire Fence Col	Col	"T" Fence Posts Col	Col	Single Loop Bale Ties Col	Galv. Barbed and Twisted Barbless Wire Col	Merch. Wire Ann'ld ¢/lb.	Merch. Wire Galv. ¢/lb.
Alabama City *R3*	173	187		212	193		9.00	9.55	
Aliquippa *J3***	173	190			190		9.00	9.675	
Atlanta *A8***	175	192		214	198		8.75	9.425	
Bartonville *K2***	175	192	178	214	198		9.10	9.775	
Buffalo *W6*	.....	.....		.....	.....		9.00	9.55*	
Chicago *N4*****	173	190	172	212	196		8.65	9.325	
Chicago *R3*	.....	.....		.....	.....		9.00	9.55	
Cleveland *A6*	.....	.....		.....	.....		.....	.....	
Cleveland *A5*	.....	.....		.....	.....		9.00	.....	
Crawf'dsv. *M4*****	175	192		214	198		9.10	9.775	
Donora, Pa. *A5*	173	187		212	193		9.00	9.55	
Duluth *A5*	173	187		212	193		9.00	9.55	
Fairfield, Ala. *T2*	173	187		212	193		9.00	9.55	
Galveston *D4*	9.10‡	.....		.....	.....		.....	.....	
Houston *S2*	178	192		217	198		9.25	9.80†	
Jacksonville *M4*	184-1	197		219	203		9.10	9.775	
Johnstown *B3***	173	190	172		196		9.00	9.675	
Joliet, Ill. *A5*	173	187		212	193		9.00	9.55	
Kokomo *C9*	175	189		214	195*		9.10	9.65*	
L. Angeles *B2*****	.....	.....		.....	.....		9.95	10.625	
Kansas City *S2**	178	192		217	198*		9.25	9.80†	
Minnequa *C6*	178	192	177	217	198†		9.25	9.80†	
Monessen *P6*	.....	.....		.....	193		8.65	9.325	
Palmer, Mass. *W6*	.....	.....		.....	.....		9.30	9.85*	
Pittsburg, Cal. *C7*	192	210		.....	213		9.60	10.15	
Rankin, Pa. *A5*	173	187		.....	193		9.00	9.55	
So. Chicago *R3*	173	187		.....	193		8.65	9.20	
S. San Fran. *C6*	.....	.....		236	.....		9.95	10.50†	
SparrowsPt. *B3***	175	.....		214	198		9.10	9.775	
Struthers, O. *Y1**	.....	.....		.....	.....		8.65	9.20	
Worcester *A5*	179	.....		.....	.....		9.30	9.85	
Williamsport *S5*	.....	.....		.....	.....		.....	.....	

* Zinc less than .10¢. *** .10¢ zinc.
** 11-12¢ zinc. † Plus zinc extras.
‡ Wholesalers only.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Anderson, Ind. *G4*	8.95	10.40	12.60	15.60	18.55
Baltimore, Md. *T8*	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. *W12*	.....	10.70	12.90	16.10	19.30
Boston *T8*	9.50	10.70	12.90	15.90	18.85
Buffalo, N. Y. *R7*	8.95	10.40	12.60	15.60	18.55
Carnegie, Pa. *S9*	8.95	10.40	12.60	15.60	18.55
Cleveland *A5*	8.95	10.40	12.60	15.60	18.55
Dearborn *S1*	9.05	10.50	12.70	.....	.....
Detroit *D1*	9.05	10.50	12.70	15.70	.....
Detroit *D2*	9.05	10.50	12.70	.....	.....
Dover, O. *G4*	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. *M8*	9.05	10.40	12.60	.....	.....
Franklin Park, Ill. *T8*	9.05	10.40	12.60	15.60	18.55
Harrison, N. J. *C11*	.....	.....	12.90	16.10	19.30
Indianapolis *R3*	9.10	10.55	12.60	15.60	18.55
Los Angeles *C1*	11.15	12.60	14.80	17.80	.....
New Britain, Conn. *S7*	9.40	10.70	12.90	15.90	18.85
New Castle, Pa. *B4*	8.95	10.40	12.60	15.60	.....
New Haven, Conn. *D1*	9.40	10.70	12.90	15.90	.....
Pawtucket, R. I. *N7*	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. *A1*	9.05	10.40	12.60	15.60	18.55
Sharon, Pa. *S1*	8.95	10.40	12.60	15.60	18.55
Trenton, *R4*	.....	10.70	12.90	16.10	19.30
Wallingford *W1*	9.40	10.70	12.90	15.90	18.55
Warren, Ohio *T4*	8.95	10.40	12.60	15.60	18.75
Worcester, Mass. *A5*	9.50	10.70	12.90	15.90	18.85
Youngstown *R3*	9.10	10.55	12.60	15.60	18.55

BOILER TUBES

$ per 100 ft. carload lots cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	B.W. Ga.	Seamless H.R.	C.D.	Elec. Weld H.R.
Babcock & Wilcox	2	13	40.28	47.21	35.22
	2½	12	54.23	63.57	47.43
	3	12	62.62	73.40	54.77
	3½	11	73.11	85.70	63.93
	4	10	97.08	113.80	85.53
National Tube	2	13	40.28	47.21	35.22
	2½	12	54.23	63.57	47.43
	3	12	62.62	73.40	54.77
	3½	11	73.11	85.70	63.93
	4	10	97.08	113.80	85.53
Pittsburgh Steel	2	13	40.28	47.21	.....
	2½	12	54.23	63.57	.....
	3	12	62.62	73.40	.....
	3½	11	73.11	85.70	.....
	4	10	97.08	113.80	.....

METAL POWDERS

Per pound, in ton lots for minus 100 mesh

Sponge iron, 98+% Fe, 100 mesh, freight allowed east of Miss. River, ocean bags, 23,000 lbs. and over	10.5¢
Sponge iron, 98+% Fe, 100 mesh, f.o.b. point of origin for shipment west of Miss. River, 100 lb. bags	9.5¢
100 mesh, cutting and scarfing grade, 100 lb pails	8.5¢
40 mesh, welding rod coating, 100 lb. bags	7.7¢
Canadian sponge iron, del'd in East, 23,000 lbs. and over	10.5¢
Atomized iron powder, 98% + Fe, 40 mesh, f.o.b. point of origin, in 100 lb. bags	7.7¢
Atomized iron powder, 98% + Fe, f.o.b. point of origin, in 100 lb. bags—RZ-365—freight allowed east of Miss. River	10.5¢
Atomized iron powder, 98% + Fe, cutting and scarfing grade, f.o.b. point of origin	8.5¢
Electrolytic iron, annealed, hydrogen reduced, 100 mesh iron powder, f.o.b. point of origin	10.5¢
imported 99.5+% Fe	24.5¢
200 mesh	33.0¢
Electrolytic iron, unannealed minus 325 mesh, 99+% Fe	57.0¢
Carbonyl iron size 3 to 20 micron, 98%, 99.8+% Fe	88.0¢ to $2.85
Aluminum, freight allowed	38.00¢
Brass, 5000 lb. lots	31.0¢ to 46.7¢
Cobalt, reduced, 99.75% f.o.b. point of origin	$2.94
Copper, electrolytic	41.00¢
Copper, electrolytic, imported, per lb., New York	41.9¢
Copper, precipitated, 24,000 lbs. and over, del'd	40.5¢ to 45¢
Copper, atomized	39.8¢ to 48.3¢
Chromium, electrolytic, 99.85% min. fe .03 mix. del'd	$5.00
Lead, f.o.b. point of origin (20,000 lbs. or more)	19¢
Manganese, f.o.b. point of origin	46.0¢
Molybdenum, 99%	$3.60 to $3.95
Nickel	$1.05 to $1.13
Nickel steel powder, del'd in East, 23,000 lbs. and over	13¢
Solder powder	13¢ plus met. value

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Pct. Discounts

Machine and Carriage Bolts	Less than Container Price	1–4 Containers	5 Containers	20,000 Lb.
¼" and smaller x 6" and shorter	34	53	58	62
5/16" x 3" x longer than 6"	9	27	34	41
Rolled thread carriage bolts ½" & smaller x 6" and shorter	33	46	54	56
Lag, all diam. x 6" & shorter	10	28	35	42
Lag, all diam. longer than 6 in.	+9	13	22	30
Plow bolts, ½" and smaller x 6" and shorter	10	28	35	42

(Add 25 pct for broken case quantities)

	Full case or Keg price
Nuts, Hex, HP reg. & hvy.	
¾ in. or smaller	62
⅞ in. to 1 ½ in. inclusive	56
1 ⅝ in. and larger	51 ½
C. P. Hex, reg. & hvy.	
¾ in. or smaller	62
⅞ in. to 1 ½ in. inclusive	56
1 ⅝ in. and larger	51 ½
Hot Galv. Hex Nuts (All Types)	
¾ in. and smaller	41
Semi-finished Hex Nuts	
¾ in. or smaller	62
⅞ in. to 1 ½ in. inclusive	57
1 ⅝ in. and larger	51 ½

(Add 25 pct for broken case or keg quantities)

Finished	
⅞ in. and smaller	65
Rivets	*Base per 100 lb*
½ in. and larger	$12.25
	Pct. Off List
7/16 in. and smaller	19

Cap Screws

Discount (Packages)

Full Finished H. C. Heat Treat

	Full Case	
New std. hex head, packaged		
⅝" diam. and smaller x 6" and shorter	54	42
¾", ⅞", and 1" diam. x 6" and shorter	38	23
⅝" diam. and smaller x longer than 6"	..	..
¾", ⅞", and 1" diam. x longer than 6"	..	..
	C-1018 Steel Full-Finished Cartons	Bulk
¼" through ⅝" dia. x 6" and shorter	59	48
¾" through 1" dia. x 6" and shorter	45	32

Minimum quantity—¼" through ⅜" diam., 15,000 pieces; 7/16" through ⅝" diam., 5,000 pieces; ¾" through 1" diam., 2,000 pieces.

Machine Screws & Stove Bolts

	Discount Mach. Screws	Stove Bolts
Plain Finish Cartons	60	60
Bulk		
Quantity		
To ¼" diam. incl. 25,000-and over	60	..
5/16 to ½" diam. incl. 15,000-200,000	60	..

Machine Screws & Stove Bolt Nuts

	Discount Hex	Square
In Cartons	16	19
Quantity		
In Bulk ⅜" diam. & smaller 25,000-and over	15	16

STEEL SERVICE CENTERS

Metropolitan Price, dollars per 100 lb.

Cities	City Delivery‡ Charge	Sheets: Hot-Rolled (18 ga. & hvr.)	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (10 gage)††	Strip: Hot-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled (merchant)	Bars: Cold-Finished	Alloy Bars: Hot-Rolled 4615 As rolled	Alloy Bars: Hot-Rolled 4130 Annealed	Alloy Bars: Cold-Drawn 4615 As rolled	Alloy Bars: Cold-Drawn 4130 Annealed
Atlanta		8.59	9.87	10.13	8.91	9.29	9.40	9.39	13.24*				
Baltimore	$.10	8.65	9.35	9.09	9.15	9.10	9.65	9.55	11.80*	16.28	15.28	19.82	19.08
Birmingham		8.18	9.45	10.46	8.51	8.89	9.00	8.99					
Boston	.15	9.48	10.54	11.55	9.84	10.17	10.13	10.26	13.49*	16.79	15.81	20.29	19.56
Buffalo	.15	8.40	9.75	11.45	8.90	9.35	9.40	9.30	11.60*	16.34	15.55	19.01	19.30
Chicago	.15	8.40	9.60	10.65	8.66	9.04	9.15	9.14	9.30	16.20	15.20	19.70	18.95
Cincinnati	.15	8.58	9.65	10.70	8.98	9.42	9.71	9.46	11.68*	16.52	15.52	20.02	19.27
Cleveland	.15	8.51	9.69	10.35	8.78	9.28	9.54	9.25	11.40*	16.31	15.31	19.81	19.06
Denver	.20	9.60	11.84	12.94	9.63	9.96	10.04	10.00	11.19				20.84
Detroit	.15	8.66	9.85	11.02	9.03	9.41	9.71	9.45	9.66	15.46	15.48	18.81	19.23
Houston		8.10	8.60		8.15	8.45	8.05	8.10	11.60	16.20	15.25	19.65	18.95
Kansas City	.15	9.02	10.27	11.37	9.33	9.71	9.82	9.81	10.22	16.87	15.87	20.37	19.62
Los Angeles		8.70[3]	11.20–11.80	12.15	9.15	9.10	9.25	9.10	12.95	17.30	16.35	21.30	20.60
Memphis	.15	8.55	9.80		8.60	8.93	9.01	8.97	12.11*				
Milwaukee	.15	8.54	9.73	10.79	8.80	9.18	9.37	9.28	9.54	16.34	15.34	19.84	19.09
New York	.10	8.97	10.23	10.66	9.74	9.87	9.84	10.09	13.31*	16.16	15.60	20.10	19.35
Norfolk	.20	8.20			8.90	8.65	9.20	8.90	10.70				
Philadelphia	.10	8.10	10.00	10.44	8.80	8.85	8.60	8.75	12.05*	16.58	15.58	20.08	19.33
Pittsburgh	.15	8.50–8.60	9.70–9.95	11.00	8.76	9.05	9.15	9.14	11.40*	16.20	15.20	19.70	18.95
Portland		10.00[1]	11.75[2]	13.30[3]	11.95[4]	11.50[5]	11.10[6]	9.85[7]	15.30*	18.50	17.45	20.75	20.25
San Francisco	.10	9.75	11.20	11.40	9.85	10.10	9.95	10.25	13.85	17.05	16.35	21.05	20.60
Seattle		9.95	11.15	12.20	10.00	9.70	9.80	10.10	14.70	17.15	16.80	20.65	20.60
Spokane	.15	10.10	11.30	12.15	10.15	9.85	9.95	10.25	14.85	17.75	16.95	21.55	20.75
St. Louis	.15	8.69	9.94	11.03	9.04	9.42	9.63	9.52	9.93	16.58	15.58	20.08	19.33
St. Paul	.15	8.94	10.19	10.86	8.99	9.45	9.53	9.70[7]	10.16		15.41		19.21

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. **All sizes except 18 and 16 gage.

†† 10¢ zinc. ‡ Deduct for country delivery. * C1018—1 in. rounds. [1] 10 ga. x 36" x 120"; [2] 20 ga. x 36" x 120"; [3] 26 ga. x 30" x 96"; [4] 4 ⅛" x 1" in lots of 1000 to 9999; [5] sheared plate ¼" x 84" in lots of 1000 to 9999; [6] 3" x 5.70" in lots of 1000 to 9999; [7] M-1020—1-in. rounds in lots of 1000 to 9999; [8] 15 ga. & heavier.

(Effective Oct. 20, 1958)

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper	
Rolled elliptical, 18 in. or longer, 5000 lb lots	41.50
Electrodeposited	32.75
Brass, 80-20, ball anodes, 2000 lb or more	45.50
Zinc, ball anodes, 2000 lb lots (for elliptical add 1¢ per lb)	16.50
Nickel, 99 pct plus, rolled carton, 5000 lb	1.0225
(Rolled depolarized add 3¢ per lb)	
Cadmium	1.55
Tin, ball anodes $1.05 per lb (approx.).	

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	66.20
Copper sulphate, 100 lb bags, per cwt.	22.15
Nickel salts, single, 100 lb bags	45.00
Nickel chloride, freight allowed, 100 lb	82.25
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums	23.70
(Philadelphia price 24.15)	
Zinc cyanide, 100 lb	60.75
Potassium cyanide, 100 lb drum N. Y.	45.50
Chromic acid, flake type, 10,000 lb or more	30.44

CAST IRON WATER PIPE INDEX

Birmingham	127.8
New York	138.7
Chicago	140.9
San Francisco-L. A.	148.6

Dec. 1955, value, Class B or heavier 5 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. *B6*	68.00	68.50	69.00	69.50	.....
Birmingham *R3*	62.00	62.50*	.....	.....	.....
Birmingham *W9*	62.00	62.50*	66.50	.....	.....
Birmingham *U4*	62.00	62.50*	66.50	.....	.....
Buffalo *R3*	66.00	66.50	67.00	67.50	.....
Buffalo *H1*	66.00	66.50	67.00	67.50	.....
Buffalo *W6*	66.00	66.50	67.00	67.50	.....
Chester *P2*	66.50	67.00	67.50	.....	.....
Chicago *I4*	66.00	66.50	66.50	67.00	.....
Cleveland *A5*	66.00	66.50	66.50	67.00	71.00†
Cleveland *R3*	66.00	66.50	66.50	67.00	.....
Duluth *I4*	66.00	66.50	66.50	67.00	71.00†
Erie *I4*	66.00	66.50	66.50	67.00	71.00†
Everett *M6*	67.50	68.00	68.50	.....	.....
Fontana *K1*	75.00	75.50	.....	.....	.....
Geneva, Utah *C7*	66.00	66.50	.....	.....	.....
Granite City *G2*	67.90	68.40	68.90	.....	.....
Hubbard *Y1*	.....	.....	66.50	.....	.....
Ironton, Utah *C7*	66.00	66.50	.....	.....	.....
Midland *C11*	66.00	.....	.....	.....	.....
Minnequa *C6*	68.00	68.50	69.00	.....	.....
Monessen *P6*	66.00	.....	.....	.....	.....
Neville Is. *P4*	66.00	66.50	66.50	67.00	71.00†
N. Tonawanda *T1*	.....	66.50	67.00	67.50	.....
Sharpsville *S3*	66.00	.....	66.50	67.00	.....
So. Chicago *R3*	66.00	66.50	66.50	67.00	.....
So. Chicago *W8*	66.00	.....	66.50	67.00	.....
Swedeland *A2*	68.00	68.50	69.00	69.50	.....
Toledo *I4*	66.00	66.50	66.50	67.00	.....
Troy, N. Y. *R3*	68.00	68.50	69.00	69.50	73.00
Youngstown *Y1*	.....	.....	66.50	.....	.....

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, $2 per ton for 0.50 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Add $1.00 for 0.31–0.69 pct phos.

Silvery Iron: Buffalo (6 pct), *H1*, $79.25; Jackson *J1*, *I4* (Globe Div.), $78.00; Niagara Falls (15.01–15.50), $101.00; Keokuk (14.01–14.50), $103.50; (15.51–16.00), $106.50. Add $1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add $1.25 for each 0.50 pct manganese over 1.00 pct. Bessemer silvery pig iron (under .10 pct phos.): $64.00. Add $1.00 premium for all grades silvery to 18 pct.

† Intermediate low phos.

STAINLESS STEEL

Base price cents per lb. f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	22.00	23.75	23.25	25.25	—	27.00	39.75	32.25	37.00	—	16.75	—	17.00
Slabs, billets	27.00	30.25	28.00	31.50	32.00	33.25	49.50	40.00	46.50	—	21.50	—	21.75
Billets, forging	—	36.50	37.25	38.00	41.00	40.50	62.25	47.00	55.75	28.25	28.25	28.75	28.75
Bars, struct.	42.00	43.00	44.25	45.00	48.00	47.75	73.00	55.50	64.75	33.75	33.75	34.25	34.25
Plates	39.25	40.00	41.25	42.25	45.00	45.75	71.75	54.75	64.75	30.00	30.00	31.25	31.00
Sheets	48.50	49.25	51.25	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	48.25	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	42.50	40.75
Wire CF; Rod HR	40.00	40.75	42.00	42.75	45.50	45.25	69.25	52.50-52.75	61.50	32.00	32.00	32.50	32.50

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11;* Brackenridge, Pa., *A3;* Butler, Pa., *A7;* Vandergrift, Pa., *U1;* Washington, Pa., *W2, J2;* Baltimore, *E1;* Middletown, O., *A7;* Massillon, O., *R3;* Gary, *U1;* Bridgeville, Pa., *U2;* New Castle, Ind., *I2;* Detroit, *M2;* Louisville, O., *R5.*

Strip: Midland, Pa., *C11;* Waukegan, Cleveland, *A5;* Carnegie, Pa., *S9;* McKeesport, Pa., *F1;* Reading, Pa., *C2;* Washington, Pa., *W2;* W. Leechburg, Pa., *A3;* Bridgeville, Pa., *U2;* Detroit, *M2;* Canton, Massillon, O., *R5;* Harrison, N. J., *D5;* Youngstown, *R5;* Sharon, Pa., *S1;* Butler, Pa., *A7;* Wallingford, Conn., *U3* (plus further conversion extras); *W1* (25¢ per lb. higher); New Bedford, Mass., *R6;* Gary, *U1* (25¢ per lb. higher).

Bar: Baltimore, *A7;* S. Duquesne, Pa., *U1;* Munhall, Pa., *U1;* Reading, Pa., *C2;* Titusville, Pa., *U2;* Washington, Pa., *J2;* McKeesport, Pa., *U1, F1;* Bridgeville, Pa., *U2;* Dunkirk, N. Y., *A3;* Massillon, O., *R5;* S. Chicago, *U1;* Syracuse, N. Y., *C11;* Watervliet, N. Y., *A3;* Waukegan, *A5;* Canton, O., *T5, R5;* Ft. Wayne, *I4;* Detroit, *R5;* Gary, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8.*

Wire: Waukegan, *A5;* Massillon, O., *R3;* McKeesport, Pa., *F1;* Ft. Wayne, *J4;* Harrison, N. J., *D3;* Baltimore, *A7;* Dunkirk, *A3;* Monessen, *P1;* Syracuse, *C11;* Bridgeville, *U2,* Detroit, *R5.*

Structurals: Baltimore, *A7;* Massillon, O., *R3;* Chicago, Ill., *J4;* Watervliet, N. Y., *A3;* Syracuse, *C11;* S. Chicago, *U1.*

Plates: Baltimore, *E1;* Brackenridge, Pa., *A3;* Chicago, *U1;* Munhall, Pa., *U1;* Midland, Pa., *C11;* New Castle, Ind., *I2;* Middletown, *A7;* Washington, Pa., *J2;* Cleveland, Massillon, *R5;* Coatesville, Pa., *C15;* Vandergrift, Pa., *U1;* Gary, *U1.*

Forging billets: Midland, Pa., *C11;* Baltimore, *A7;* Washington, Pa., *J2;* McKeesport, *F1;* Massillon, Canton, O., *R5;* Watervliet, *A3;* Pittsburgh, Chicago, *U1;* Syracuse, *C11;* Detroit, *R5;* Munhall, Pa., S. Chicago, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8.*

(Effective Oct. 20, 1958)

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Put this three-way saving to work in your own operations with ElectroLift Worm Drive Hoists. Designed in capacities up to ten tons, ElectroLift moves materials faster, more economically with less effort. Its efficient, long service saves its initial cost many times over.

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FERROALLOY PRICES

Ferrochrome

Cents per lb contained Cr, lump, bulk, carloads, del'd. 67-71% Cr, .30-1.00% max. Si.

0.02% C....	41.00	0.50% C....	38.00
0.05% C....	39.00	1.00% C....	37.75
0.10% C....	38.50	1.50% C....	37.50
0.20% C....	38.25	2.00% C....	37.25

4.00-4.50% C, 60-70% Cr, 1-2% Si.. 28.75
3.50-5.00% C, 57-64% Cr, 2.00-4.50% Si 28.25
0.025% C (Simplex) 36.75
7-8½% max C, 50-55% Cr, 3-6% max Si 25.75
7-8½% max C, 50-55% Cr, 3% max Si 26.50

High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max. 0.10% C price schedule.

Chromium Metal

Per lb chromium, contained, packed, delivered, ton lots, 97.25% min. Cr, 1% max. Fe.
0.10% max. C $1.31
9 to 11% C, 88-91% Cr, 0.75% Fe... 1.40

Electrolytic Chromium Metal

Per lb of metal 2" x D plate (⅛" thick) delivered packed, 99.80% min. Cr. (Metallic Base) Fe 0.20 max.
Carloads $1.15
Ton lots 1.17
Less ton lots 1.19

Low Carbon Ferrochrome Silicon

(Cr 39-41%, Si 42-45%, C 0.05% max.) Carloads, delivered, lump, 3-in. x down, packed.

Price is sum of contained Cr and contained Si.

	Cr	Si
Carloads, bulk	29.40	14.60
Ton lots	34.65	16.35
Less ton lots	36.25	18.55

Calcium-Silicon

Per lb of alloy, lump, delivered, packed. 30-33% Cr, 60-65% Si, 3.00 max. Fe.
Carloads 25.65
Ton lots 27.95
Less ton lots 29.45

Calcium-Manganese—Silicon

Cents per lb of alloy, lump, delivered, packed.
16-20% Ca, 14-18% Mn, 53-59% Si.
Carloads 24.25
Ton lots 26.15
Less ton lots 27.15

SMZ

Cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.
Ton lots 21.15
Less ton lots 22.40

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.
Carload lots 18.45
Ton lots 19.95
Less ton lots 21.20

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.
Carload packed 19.20
Ton lots to carload packed 21.15
Less ton lots 22.40

Ferromanganese

Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn.

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	12.25
Johnstown, Pa.	12.25
Neville Island, Pa.	12.25
Sheridan, Pa.	12.25
Philo, Ohio	12.25
S. Duquesne	12.25

Add or substract 0.1¢ for each 1 pct Mn above or below base content.

Briquets, delivered, 66 pct Mn:
Carloads, bulk 14.80
Ton lots packed in bags 17.20

Spiegeleisen

Per gross ton, lump, f.o.b. Palmerton, Pa., and Neville Island, Pa.

Manganese	Silicon	
16 to 19%	3% max.	$100.50
19 to 21%	3% max.	102.50
21 to 23%	3% max.	105.00

Manganese Metal

2 in. x down, cents per pound of metal delivered.
95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.
Carload, packed 45.75
Ton lots 47.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.
Carloads 34.00
Ton lots 36.00
250 to 1999 lb 38.00
Premium for Hydrogen - removed metal 0.75

Medium Carbon Ferromanganese

Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max., carloads, lump, bulk, delivered, per lb of contained Mn 25.50

Low-Carb Ferromanganese

Cents per pound Mn contained, lump size, del'd Mn 85-90%.

	Carloads	Ton (Bulk)	Less
0.07% max. C, 0.06% P, 90% Mn	37.15	39.95	41.15
0.07% max. C	35.10	37.90	39.10
0.10% max. C	34.35	37.15	38.35
0.15% max. C	33.60	36.40	37.60
0.30% max. C	32.10	34.90	36.10
0.50% max. C	31.60	34.40	35.60
0.75% max. C, 80-85% Mn, 5.0-7.0% Si ...	28.60	31.40	32.60

Silicomanganese

Lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.
Carloads bulk 12.80
Ton lots, packed 14.45
Briquet contract basis carloads, bulk, delivered, per lb of briquet 15.10
Packed, pallets, 3000 lb up to carloads 16.50

Silvery Iron (electric furnace)

Si 15.50 to 16.00 pct., f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $106.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $93.00.

Silicon Metal

Cents per pound contained Si, lump size, delivered, packed.

	Ton lots, packed	Carloads, packed
96.75% Si, 1.25% Fe..	24.70	23.40
98% Si, 0.75% Fe	24.45	24.15

Silicon Briquets

Cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.
Carloads, bulk 8.00
Ton lots, packed 10.80

Electric Ferrosilicon

Cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.

50% Si....	14.60	75% Si....	16.90
65% Si....	15.75	85% Si....	18.60
		90% Si....	20.00

Ferrovanadium

50-55% V delivered, per pound, contained V, in any quantity.
Openhearth 3.20
Crucible 3.30
High speed steel (Primos) 3.40

Calcium Metal

Eastern zone, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
100 to 1999 lb..	2.40	3.30	4.55

(Effective Oct. 20, 1958)

Alsifer, 20% Al, 40% Si, 40% Fe, f.o.b. Suspension Bridge, N. Y., per lb.
Carloads, bulk ..... 10.35¢
Ton lots ..... 11.70¢

Calcium molybdate, 43.6-46.6% f.o.b. Langeloth, Pa., per pound contained Mo $1.28

Ferrocolumbium, 50-50%, 2 in. x D, delivered per pound contained Cb.
Ton lots $4.00
Less ton lots..... 4.05

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, del'd ton lots, 2-in. x D per lb con't Sb plus Ta $3.80

Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth, Pa., per pound contained Mo.. $1.68

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $5.00 unitage, per gross ton $120.00
10 tons to less carload $131.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.50
Less ton lots $1.54

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton $240.00

Ferrotungsten, ¼ x down packed, per pounds contained W, ton lots delivered ..... $2.15 (nominal)

Molybdic oxide, briquets per lb contained Mo, f.o.b. Langeloth, Pa. $1.41
bags, f.o.b. Washington, Pa., Langeloth, Pa. $1.38

Simanal, 20% Si, 20% Mn, 20% Al, f.o.b. Philo, Ohio, freight allowed per lb.
Carload, bulk lump ..... 18.50¢
Ton lots, packed lump ..... 20.50¢
Less ton lots ..... 21.00¢

Vanadium oxide, 86-89% V_2O_5 per pound contained V_2O_5 .... $1.38

Zirconium, per lb of alloy
35-40% f.o.b. freight allowed, carloads, packed ..... 27.25¢
12-15%, del'd lump, bulk-carloads ..... 9.25¢

Boron Agents

Borosil, per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B
2000 lb carload $5.50

Bortram, f.o.b. Niagara Falls.
Ton lots per pound ..... 45¢
Less ton lots, per pound ..... 50¢

Corboritum, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4-5-7.5%, f.o.b., Suspension Bridge, N. Y., freight allowed.
Ton lots per pound ..... 14.00¢

Ferroboron, 17.50 min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, ton lots. F.o.b. Wash., Pa., Niagara Falls, N. Y., delivered 100 lb up $1.20
10 to 14% B ..... .85
14 to 19% 1.20
19% min. B 1.50

Grainal, f.o.b. Cambridge, O., freight, allowed, 100 lb and over
No. 1 ..... $1.05
No. 79 ..... 50¢

Manganese-Boron, 75.00% Mn, 15.20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.
Ton lots (packed) $1.46
Less ton lots (packed) 1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots 2.15

ELECTRICAL POWER EQUIPMENT IN STOCK

DC MOTORS

Qu.	H.P.	Make	Type	Volts	RPM
1	3900	New Elliott	Enc. F.V.	475	320
1	3000	New Whse.	Enc. F.V.	525	600
1	2250	New Elliott	Enc. F.V.	600	200/300
1	2200	G.E.	MCF	600	400/500
1	1750	New Elliott	Enc. F.V.	250	175/250
8	1500	New Whse.	Enc. F.V.	525	600
1	1375	G.E.	MCF	415	1200
1	1300	G.E.	MCF-13	300	200/400
1	1200	G.E.	MCF	600	450/600
1	1000	Whse.		500	800/2000
1	940	Whse.	QM	250	140/170
2	940	S.S.	Enc. F.V.	600	800/1000
2	800	G.E.	MCF	250	400/750
2	750	G.E.	MCF	600	450/900
1	750	G.E.	MCF	600	300/720
1	750	G.E.	MCF	600	120/360
2	645	S.S.	Enc. F.V.	300	1000
4	600	Whse.		250	275/550
1	500	G.E. B.B.	TLF-2858H	250	2000/3600
1	500	G.E.	MPC-10	250	188/400
3	450	Whse.		550	415
2	400	G.E.	CY-275	300	1000/1500
1	300	Cr.Wh.	H-102 B.B.	230	1200
2	300	G.E.	MPC	230	400
2	275	G.E. B.B.	TLC-108	250	2000/4000
1	225	G.E. B.B.		250	1150/3600
1	200	Rel. B.B.	T-883-D.P.	240	1150
1	200	Rel. B.B.	T-884-D.P.	240	850
1	200	Whse.	CR-207.4	250	850/1200
1	150	Cr.Wh.	CMC-485H	230	1150
1	150	G.E. B.B.	TLC-74	250	1150/3500
1	150	G.E. B.B.	CD	600	250/750
1	120	G.E. B.B.	TLC-50	250	1950/5000
1	125/150	New Whse.	CR-210.3	230	300/1200
1	120	Rel. B.B.	1050T	230	575/900
2	125	Whse.	SK-100	230	450/1200
1	125	Whse.	SK-185	230	350/1050
1	100	G.E.	CDP-115	230	1750
1	80	Whse.	SK-129 9	240	2000/4500
1	75	Rel. B.B.	T-883 D.P.	240	800/1000
1	75	G.E. B.B.	CD-1285-D.P.	600	850
1	60/75	Rel. B.B.	T-884-D.P.	240	800/1200
1	46	Rel. B.B.	TY 883	240	800/1200
1	25/22	Rel. B.B.	TY 583	240	800/1200
2	60	Rel. B.B.	T-405-D P	240	1750/2400
1	50	Rel. BB.	T-405-D.P.	240	1750
1	40	Rel. B.B.	T-405-D.P.	240	1750
6	40	Rel. B.B.	285F TEFC	230	500/1500
1	30/40	Rel. B.B.	T-584-D.P.	240	300/900

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MG SETS—3 Ph. 60 Cy.

Qu.	K.W.	Make	RPM	DC Volts	AC Volts
1	2000	G.E.	514	600	2300/4600
2	1750/2100	G.E.	514	250/300	2300/4600
1	1750	G.E.	514	600	2300/4600
1	1500	G.E.	720	600	6600/13200
1	1500	G.E.	600	600	11000/6600
1	1500	S.S. Kunit	720	600	11000/6600
1	1500	Cr.Wh. 4 unit	720	100	2300
2	1000	G.E.	720	600	6600/13200
2	750	G.E.	720	250/300	6600/13200
1	500	G.E.	900	125/250	440
1	350	G.E.	900	125	440/2300/4160
1	300	G.E.	1200	250	2300/4600
1	300	G.E.	1200	250	440/2300
1	240	Whse.	900	125	220/440
1	200	G.E.	1200	250	440/550
1	200	Whse.	1200	550	2300
1	200	El. Mfg.	1200	250	2300/4600
1	150	G.E.	1200	275	2300
1	150	Whse.	1200	275	2300
1	150	G.E.	1200	125	440
1	140	Cr.Wh.	600	125/250	2300
1	125	G.E.	1800	250	220/440
1	100	G.E.	1170	250	220/440
1	100	Cr.Wh.	1800	240	440
2	100	Cr.Wh.	1140	525	220/550
1	100	G.E.	1200	250	2400/4100
2	75	Whse.	1200	125	440

TRANSFORMERS

Qu.	KVA	Make	Type	Ph.	Voltages
3	3333	Whse.	OISC	1	13800 x 2300
1	1500	G.E. auto	HT	3	4000/4200/4400
3	1000	G.E.	OA/FA	1	13800 x 230/460
2	750	G.E.	Pyranol	1	4800x55/55-255/165
2	500	Kuhl	OISC	1	12200 x 6600
3	333	G.E.	HR-W4R	1	2400/4160 240 x 480
3	333	G.E.	OISC	3	2400/4160Y x 800
3	150	G.E.	OISC	1	3360x2300/4000Y
3	100	Whse.	SK	1	4800x460/230/115
3	100	L.M.	LA	1	4160/7200 x 240/480

CRANE & MILL MOTORS

230 V., D.C.

Qu.	H.P.	Make	RPM	Type
14	12/15	Whse.	700/800	MCA-30, Series
1	20	Whse.	975	K-5, Series
2	22	G.E.	850	MDS-408
2	25	G.E.	725	CO-1808, Series
1	35	Whse.	490	CK-9 Comp. S.B.
1	35	Whse.	490	CK-9 Sh. R.B.
1	45	Whse.	600	CK-9 Comp. S.B.
8	50	G.E.	650	COM-1830 Comp.
3	50	Whse.	525	CK-9 Shunt R.B.
2	50	Whse.	600	CK-9 Comp. R.B.
1	50	G.E.	525	COM-1830AE B.B.
1	50	Cr.Wh.	550	SW-50 Comp.
1	100	G.E.	475	CO-1832 S.B.
6	100/140	Whse.	500/415	MC-90 B.B.

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Sales Gloom Fades At Philadelphia

▪ The recession clouds above the Philadelphia used machinery market are beginning to clear away. But the sun isn't out yet.

Dealers report these encouraging signs: Inquiries are at a high level. Buyers long hesitant about making needed purchases are finally climbing off the fence. Sales resistance is crumbling.

Not all sellers have noticed the upturn. Some describe the market as still static. But others are really enthused.

Strong September — "September was the best month we've had in almost a year and a half," says one dealer. "Our customers are getting busy again. We're closing deals long pending, but also hearing from new buyers. Our profit isn't coming from a few large sales, but from a large volume of orders."

Another seller comments: "September was the best month we've had all year. It wiped out all our losses up to that point. Inquiries that came in as far back as June finally resulted in sales."

Toolroom Items Popular—Dealers say the improvement results from sale of equipment they bought recently at lower prices. The machine tools they purchased at higher prices for stock last year are still sitting in the warehouses.

The demand pickup has been concentrated in toolroom items. There's less activity in heavier production equipment.

WHOLE-HEARTED EFFORT: Two years of work were climaxed last week when members of Philadelphia Chapter of the Machinery Dealers National Assn. donated a complete machine shop to Hahnemann Medical College and Hospital. Shop will be used by technicians to turn out instruments, tools, and equipment for advance study of heart surgery.

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4" x 4" x ⅝" Thomas #3 Horizontal
BALER
Model 123PX76 Logemann Hydraulic Baler Box 76" x 18" x 30" Deep, Bale 18" x 8"
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8" x ¼" Bertsch Initial Type
10' x ⅜" Bertsch Initial Type
12' x ⅝" Hilles & Jones Pyramid Type
13' x 3/16" Bertsch Initial Type—NEW
32' x ⅜" Baldwin Pyramid Type
BRAKE—LEAF TYPE
12' x ¼" Dreis & Krump #226
CRANES—OVERHEAD ELECTRIC TRAVELING

7½ ton P&H	60' Span 230 Volt D.C.
8 ton P&H	55' Span 220/3/60
10 ton P&H	50' span 230 Volt D.C.
10 ton P&H	39' Span 230 Volt D.C.
10 ton Milwaukee	57' Span 220 Volt D.C.
10 ton Shaw	48' Span 230 Volt D.C.
10 ton Whiting	75' Span 220/3/60 A.C.
10 ton Shaw	120' Span 230 Volt D.C.
15 ton P&H	50' Span 230 Volt D.C.
15 ton Northern	54' Span 230 Volt D.C.
15 ton Shepard Niles	56' Span 230 Volt D.C.
15 ton N-B-P	100' Span 220/3/60 A.C.
120 ton Shepard Niles	77' Span 220/3/60

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3000 lb. Draw Bench, 20 ft. Pull
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70" x 110" x 16' Liberty Four Head
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20" Murray-Way Micro Polish Machine—NEW 1950
PRESSES—HYDRAULIC
500 otn Watson Stillman Piercing Press 48" x 72"
500 ton HPM Fastraverse, Bed 36" x 36"
600 ton Birdsboro, Platen 48 x 48", 15" Stroke
1000 ton HPM Fastraverse, Bed 48" x 72", 36" Stroke
4500 ton B-L-H Bed 68 x 68", Stroke 40"
PRESES—STRAIGHT SIDE
100 ton Toledo #37½, 10" Stroke, Bed 20" x 20"
215 ton Clearing, 24" Stroke, Bed 36" x 42"
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#168¾ Toledo, 18" Stroke of Blankholder, 28" Stroke of Plunger, Bed 48" x 51"
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Buffalo #1½ Ironworker
Cleveland Style C; Arch Jaw, Capy. ¾" x ¾"
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A

Acme-Newport Steel Co. 77
Aetna-Standard Engineering Co., The 36
American Air Compressor Corp. 119
*American Hoist & Derrick Co... 79
American Steel & Wire Div., United States Steel Corp....14 & 15
*Armco Steel Corp. 6
*Armstrong Bros. Tool Co..... 96
*Atlas Car & Mfg. Co., The 95

B

Baldwin-Lima-Hamilton Corp., Loewy-Hydropress Div. 44
*Barber-Colman Co. .....98 & 99
Belyea Co., Inc. 118
*Bethlehem Steel Co. 1
*Bliss, E. W., Co., Rolling Mill Division ..... Back Cover
Boston Metals Company 119
Boynton, A. J., & Co. 96
*Brush Instruments Division of Clevite Corporation 16

C

*Carborundum Co., Refractories Division 17
*Chambersburg Engineering Co. 34
Chase Brass & Copper Co., Inc... 82
Cleveland Crane & Engineering Co., The Steelweld Machinery Div. .....52 & 53
*Colorado Fuel & Iron Corp. The, Wickwire Spencer Steel Div.... 103
Columbia-Geneva Steel Division United States Steel Corp...14 & 15
*Connecticut Hard Rubber Co., The 54
Consumers Steel & Supply Co.... 121
Copperweld Steel Co., Aristoloy Steel Division... Inside Front Cover
*Crucible Steel Co. of America 92 & 93
*Cullen-Friestedt Co. 105

D

Dravo Corporation 57
*Dreis & Krump Mfg. Co..... 13

E

Eastern Machinery Co., The..... 120
*ElectroLift, Inc. 116
*Euclid Crane & Hoist Co., The.. 103

F

*Ferry Cap & Set Screw Co., The 103
Foster, L. B., Company..... 120
Frank, M. K. 119

G

*Gardner Machine Co..... 8
General Refractories Co.... 58 & 59
General Steel Castings Corp., National Roll & Foundry Div... 12
Goldsborough, Arnold 121
Goodman Electric Machinery Co. 119
Goss & DeLeeuw Machine Co.... 96

H

Henry, A. T., & Company, Inc... 119
*Hevi-Duty Electric Company..80 & 81
Hughes, Arnold, Co..... 121
Hyman, Joseph, & Sons..... 119

I

*Inland Steel Co. 39
Iron & Steel Products, Inc..... 119
*Irving Subway Grating Co., Inc. 78

J

James Industries, Inc. 121

K

Kaiser Aluminum & Chemical Sales Inc., Kaiser Chemicals Division 10

L

Laclede Steel Co. 56
Lang Machinery Co., Inc..... 120
Lesco Products Co. 121
Lilly, Eli, & Company 49
Link-Belt Co. 43
Loewy-Hydropress Division, Baldwin-Lima-Hamilton Corp... 44

M

MacCabe, T. B., Co..... 120
Marshall Railway Equip. Corp... 120
Miles Machinery Co. 120
Morrison Railway Supply Corp.. 120
*Mundt, Chas., & Sons..... 116
Murphy Machinery, Inc. 121

N

National Machinery Exchange... 120
National Roll & Foundry Div., General Steel Castings Corp... 12
*National-Standard Co. 55

O

Ohio Steel Foundry Co., The.... 50
Ornitz Equipment Corp. 120
*Osborn Mfg. Co., The, Brush Division 5

P

*Pennsylvania Flexible Metallic Tubing Co., Inc. 11
*Pittsburgh Engineering & Machine Division of Pittsburgh Steel Foundry Corporation 4
Purdy Company, The 121

R

Rail & Industrial Equip. Co., Inc. 119
*Reading Crane & Hoist Corp.... 97
Reliance Electric & Engineering Co. ..... Inside Back Cover
*Republic Steel Corp. .....86 & 87
*Roebling's, John A., Sons Corp. 89
Ryerson, Jos. T., & Son, Inc..... 100

S

*Sandvik Steel, Inc. 46
Seidelhuber Iron & Bronze Works, Inc. 121
*Sheffield Corporation, The, of Bendix Aviation Corporation .. 90
Somers Brass Co., Inc. 9
Stamco, Inc. 96
Stanhope, R. C., Inc. 121
*Steelweld Div., The Cleveland Crane & Engineering Co....52 & 53

T

Tennessee Coal & Iron Div., United States Steel Corp...14 & 15
Texas Company, The 42
*Timken Roller Bearing Co., The 20
Tractor & Equipment Co..... 121

U

United States Steel Corp...14, 15 & 60
United States Steel Export Co. 14 & 15
U. S. Steel Wire Spring Co., The 122

W

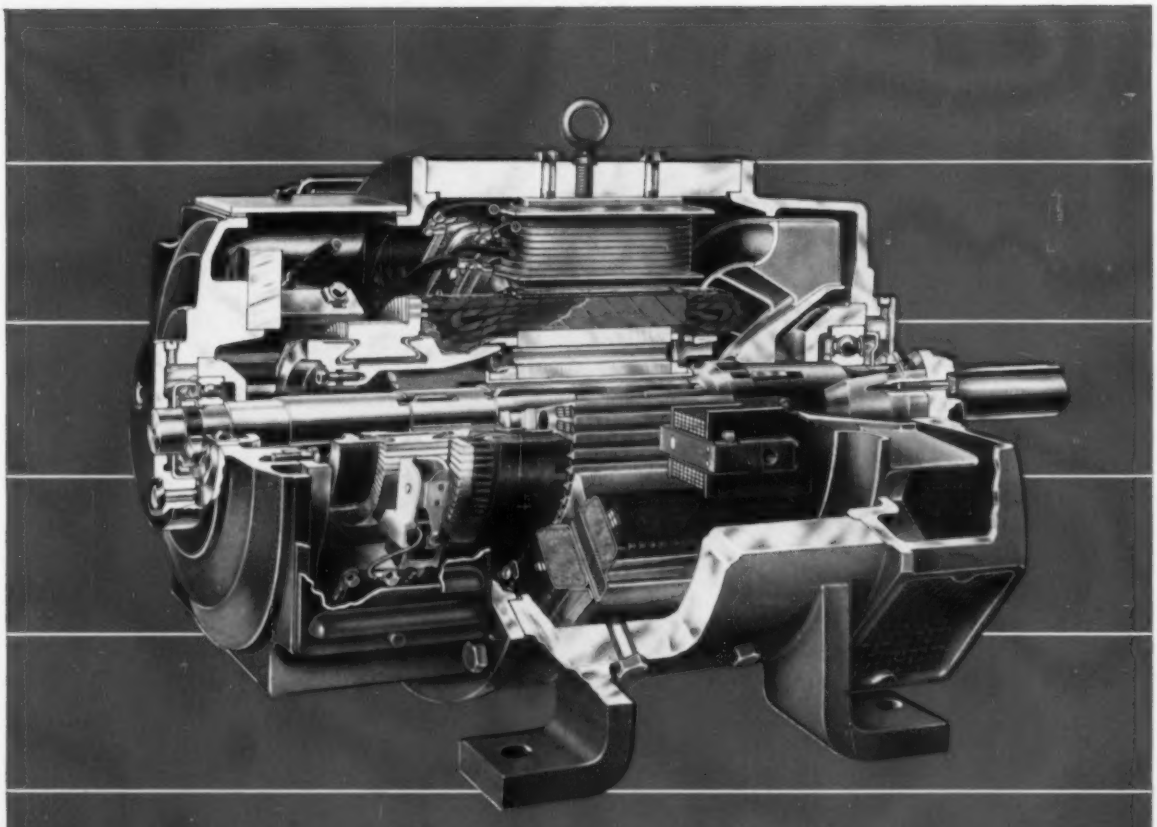
Wallack Bros. 121
Ward Steel Co. 97
Weiss Steel Co., Inc..... 121
*Westinghouse Electric Corp..... 33
Wheland Co., The 54
Whisler Equipment Co. 121
*Whiting Corporation 18
*Wickwire Spencer Steel Div., The Colorado Fuel & Iron Corp..... 103

Y

*Yoder Co., The 88
Youngstown Sheet & Tube Co., The 31
Yuba Consolidated Industries, Inc. 121

CLASSIFIED SECTION

Clearing House 118-121
Contract Manufacturing Appears in first and third issue of each month. See Oct. 2 & Oct. 16
Employment Exchange 121
Equipment & Materials Wanted.. 121



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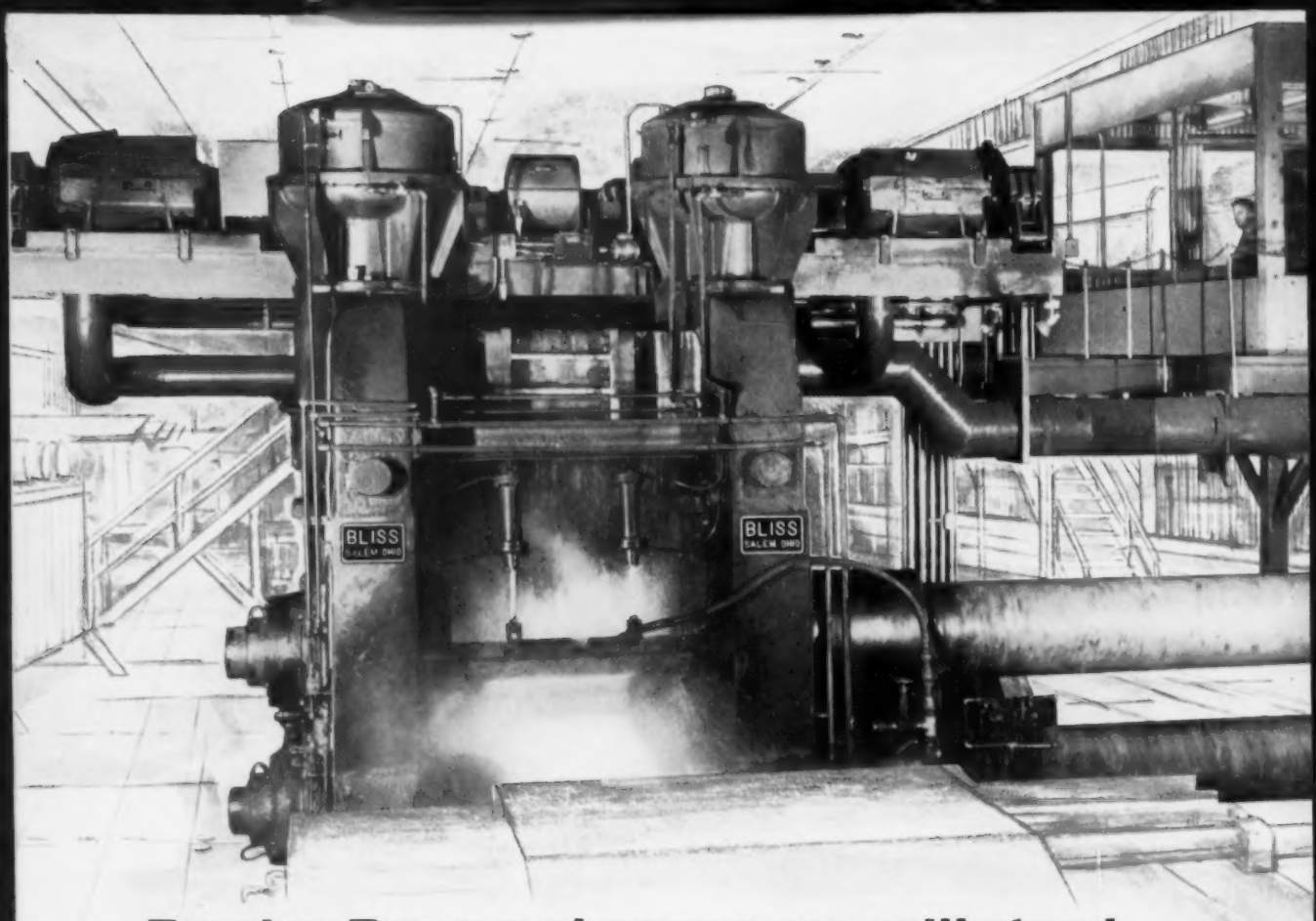

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